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Projects to Expand Fuel Sources in Western States

Survey of Planned or Proposed Coal, Oil Shale, Tar Sand, Uranium, and Geothermal Supply Expansion Projects, and Related Infrastructure, in States West of the Mississippi River (as of May 1976)

UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. Bureau of Mines.

Information Circular 8719

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By John S. Corsentino
Intermountain Field Operations Center, Denver, Colo.

With Contributions by Bureau of Mines Western State Liaison Officers

UNITED STATES DEPARTMENT OF THE INTERIOR
Thomas S. Kleppe, Secretary

BUREAU OF MINES
Thomas V. Falkie, Director

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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FOREWORD

Adequate and dependable quantities of fuels and energy from domestic sources are essential to the Nation's economy, security, and standard of living. In order to develop policies and initiate programs to assure that energy requirements are efficiently met and socio-economic and environmental impacts are ameliorated, it is necessary to know the plans of the energy industry relative to the construction of future fuels-related facilities.

This Bureau of Mines report is in response to the extraordinary interest expressed in both the public and private sectors for timely information on fuels-related projects that are being constructed or are under consideration. The report is the first comprehensive inventory of its kind presenting data on fuels-related facilities that are planned, proposed, or under construction at locations in all conterminous states west of the Mississippi River. A related report, covering projects in states east of the Mississippi River, is presently under preparation. Both reports are planned to be updated on an annual basis.

Any comments, questions, or requests for additional information regarding this report should be referred to the author, who is located at the Bureau of Mines Intermountain Field Operation Center, Denver, Colorado.

Thomas V. Falkie

Thomas V. Falkie
Director, Bureau of Mines

CONTENTS

	Page
Abstract	1
Introduction	1
Acknowledgments	3
Summary of fuels-related projects, planned or proposed, in the Western United States	3
Coal mines	5
Electric powerplants and expansions	6
Coal conversion plants	8
Waste-to-fuel conversion plants	8
Oil shale projects and tar sands projects	8
Potential geothermal facilities	8
Coal slurry pipelines	9
Railroads related to fuels development	10
Uranium mines, mills, and enrichment facilities	10
Oil refineries and natural gas processing plants	11
A listing of future fuels-related projects in the Western United States	12
Arizona	12
Arkansas	17
California	22
Colorado	33
Idaho	57
Iowa	61
Kansas	66
Louisiana	72
Minnesota	77
Missouri	81
Montana	87
Nebraska	96
Nevada	100
New Mexico	105
North Dakota	116
Oklahoma	125
Oregon	132
South Dakota	143
Texas	151
Utah	165
Washington	181
Wyoming	188

CONTENTS--Continued

Page

Appendix--Methods used in data estimates 208

ILLUSTRATIONS

Fig.

1. Future fuels-related projects in Arizona 13
2. Future fuels-related projects in Arkansas 18
3. Future fuels-related projects in California 24
4. Future fuels-related projects in Colorado 36
5. Future fuels-related projects in Idaho 58
6. Future fuels-related projects in Iowa 62
7. Future fuels-related projects in Kansas 67
8. Future fuels-related projects in Louisiana 73
9. Future fuels-related projects in Minnesota 78
10. Future fuels-related projects in Missouri 82
11. Future fuels-related projects in Montana 88
12. Future fuels-related projects in Nebraska 97
13. Future fuels-related projects in Nevada 101
14. Future fuels-related projects in New Mexico 107
15. Future fuels-related projects in North Dakota 117
16. Future fuels-related projects in Oklahoma 126
17. Future fuels-related projects in Oregon 133
18. Future fuels-related projects in South Dakota 144

ILLUSTRATIONS--Continued

Page

19. Future fuels-related projects in Texas 153

20. Future fuels-related projects in Utah 167

21. Future fuels-related projects in Washington 182

22. Future fuels-related projects in Wyoming 191

TABLES

1. Number of future fuels-related projects by state 4

2. Number of future fuels-related projects by type of facility 4

3. Future coal mines and capacities by state 5

4. Future electric powerplants and capacities by state 6

5. Future coal conversion plants and capacities by state 7

6. Future oil shale projects by state 8

7. Potential geothermal facilities by state 9

8. Future coal slurry pipelines by state of origin 9

9. Future railroads related to fuels development by state 10

10. Future uranium mines, mills, and enrichment facilities by state 10

11. Future oil refineries and natural gas processing plants by state 11

12. Future coal mines in Arizona 14

13. Future electric powerplants in Arizona 14

TABLES--Continued

		Page
14.	Future railroads related to fuels development in Arizona	15
15.	Future coal mines in Arkansas	19
16.	Future electric powerplants in Arkansas	19
17.	Future natural gas processing plants in Arkansas	20
18.	Future electric powerplants in California	25
19.	Potential geothermal facilities in California	30
20.	Future oil refineries in California	31
21.	Future coal mines in Colorado	37
22.	Future electric powerplants in Colorado	46
23.	Future coal conversion plants in Colorado	48
24.	Future waste-to-fuel conversion plants in Colorado	49
25.	Future oil shale projects in Colorado	50
26.	Potential geothermal facilities in Colorado	52
27.	Future coal slurry pipelines originating in Colorado	53
28.	Future railroads related to fuels development in Colorado	54
29.	Future uranium mines in Colorado	54
30.	Future electric powerplants in Idaho	59
31.	Potential geothermal facilities in Idaho	59
32.	Future coal mines in Iowa	63
33.	Future electric powerplants in Iowa	63

TABLES--Continued

		Page
34.	Future coal mines in Kansas	68
35.	Future electric powerplants in Kansas	68
36.	Future electric powerplants in Louisiana	74
37.	Future oil refineries in Louisiana	75
38.	Future natural gas processing plants in Louisiana	75
39.	Future electric powerplants in Minnesota	79
40.	Future electric powerplants in Missouri	83
41.	Future coal mines in Montana	89
42.	Future electric powerplants in Montana	91
43.	Future coal conversion plants in Montana	93
44.	Future coal slurry pipelines originating in Montana	94
45.	Future electric powerplants in Nebraska	98
46.	Future electric powerplants in Nevada	102
47.	Potential geothermal facilities in Nevada	102
48.	Future coal mines in New Mexico	108
49.	Future electric powerplants in New Mexico	109
50.	Future coal conversion plants in New Mexico	110
51.	Potential geothermal facilities in New Mexico	110
52.	Future coal slurry pipelines originating in New Mexico	111
53.	Future railroads related to fuels development in New Mexico	111

TABLES--Continued

		Page
54.	Future uranium mines in New Mexico	112
55.	Future uranium mills or enrichment facilities in New Mexico	113
56.	Future coal mines in North Dakota	118
57.	Future electric powerplants in North Dakota	120
58.	Future coal conversion plants in North Dakota	122
59.	Future coal mines in Oklahoma	127
60.	Future electric powerplants in Oklahoma	128
61.	Future oil refineries in Oklahoma	130
62.	Future natural gas processing plants in Oklahoma	130
63.	Future electric powerplants in Oregon	134
64.	Future waste-to-fuels conversion plants in Oregon	136
65.	Potential geothermal facilities in Oregon	137
66.	Future uranium mines in Oregon	140
67.	Future oil refineries in Oregon	140
68.	Future natural gas processing plants in Oregon	141
69.	Future electric powerplants in South Dakota	145
70.	Future coal conversion plants in South Dakota	148
71.	Future natural gas processing plants in South Dakota	149
72.	Future coal mines in Texas	154
73.	Future electric powerplants in Texas	155
74.	Future coal conversion plants in Texas	160

TABLES--Continued

		Page
75.	Future uranium mines in Texas	160
76.	Future oil refineries in Texas	162
77.	Future natural gas processing plants in Texas	163
78.	Future coal mines in Utah	168
79.	Future electric powerplants in Utah	173
80.	Future coal conversion plants in Utah	175
81.	Future waste-to-heat conversion plants in Utah	175
82.	Future oil shale projects in Utah	175
83.	Future tar sands projects in Utah	176
84.	Potential geothermal facilities in Utah	177
85.	Future coal slurry pipelines originating in Utah	177
86.	Future railroads related to fuels development in Utah	178
87.	Future uranium mines in Utah	178
88.	Future coal mines in Washington	183
89.	Future electric powerplants in Washington	183
90.	Future uranium mines in Washington	185
91.	Future uranium mills in Washington	186
92.	Future coal mines in Wyoming	192
93.	Future electric powerplants in Wyoming	199
94.	Future coal conversion plants in Wyoming	200
95.	Future coal slurry pipelines originating in Wyoming	201

TABLES--Continued

Page

96. Future railroads related to fuels development in Wyoming 202

97. Future uranium mines in Wyoming 202

98. Future uranium mills in Wyoming 204

99. Future oil refineries in Wyoming 204

100. Future natural gas processing plants in Wyoming 204

PROJECTS TO EXPAND FUEL SOURCES IN WESTERN STATES

Survey of Planned or Proposed Coal, Oil Shale, Tar Sand, Uranium, and Geothermal Supply Expansion Projects, and Related Infrastructure, in States West of the Mississippi River (as of May 1976)

by

John S. Corsentino [1]

with contributions by
Bureau of Mines Western State Liaison Officers

ABSTRACT

This Bureau of Mines study is a listing of fuels -related projects that are presently under construction, planned, or proposed by various companies and organizations in the Western United States. The future facilities covered in this report fall into the following categories: coal mines and expansions to existing mines, electric powerplants and expansions to existing plants, coal conversion plants, waste-to-fuel conversion plants, oil shale projects, tar sands projects, potential geothermal facilities, coal slurry pipelines, railroads related to fuels development, uranium mines and expansions to existing mines, uranium mills and enrichment facilities, oil refineries, and natural gas processing plants. The projects are listed by state. Data concerning the company, location, planned markets, process type, initial operating date, capacity, water requirements, employment, current status, and other relevant information are included. Each project has been plotted on an accompanying state map.

Due to present uncertainties concerning the fuels industry, some of the listed projects may never be constructed. No attempt has been made to determine the degree of certainty or viability of each project.

INTRODUCTION

As the need for new sources of fuels increases, many plans have been announced concerning the construction of new fuels -related facilities in the Western United States. This Bureau of Mines study is in response to an extraordinary interest expressed by both the private and public sectors concerning fuels -related projects that are planned, proposed, or under construction in the West by many companies and organizations.

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[1]Energy economist, Intermountain Field Operations Center.

This interest was demonstrated by the wide and well-received response to an August 1975 release entitled "A Listing of Proposed, Planned, or Under Construction Energy Projects in Federal Region VIII".[2] The response illustrated the need for a comprehensive inventory of future fuels-related facilities in the western states. Hence, this study updates and supplements the August 1975 report and has been greatly expanded to include all conterminous states west of the Mississippi River and additional types of fuels-related projects not covered by the August 1975 report.

Certain limitations are inherent in a report of this nature because of the many uncertainties concerning private company plans, public policy, and the outcome of existing and potential litigation and legislation. Information is presented on some projects which may or may not ever be constructed or developed. The uncertainty is well illustrated by the recent Kaiparowits electric power project, which although included in this report has apparently been cancelled or significantly modified. No attempt was made to determine the viability or the degree of certainty for any of the projects.

The short time frame available for completing this study, the use of many data sources, the large amount of data collected, and the dynamic nature of the projects may result in dated information or in omissions of projects. A concerted effort was made to avoid exclusions and to reconcile any inconsistencies while using the most current information available. Estimates were made in certain areas to fill in data gaps and are shown as such. Project locations on the accompanying maps, while necessarily shown at particular locations, may be only county specific in some areas.

It is recognized that petroleum and natural gas will continue to provide a major portion of the nation's energy supply for the remainder of the century. However, the dynamic nature of oil and gas exploration programs including the great number of areas being explored at a given time, the relatively short time frame involved for drilling exploratory wells, and the ratio of dry holes to successes make it virtually impossible to pinpoint and forecast new areas of oil and gas production. Therefore, these areas have not been covered in this report.

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[2]A joint report prepared for the Committee on Energy and Environment of the Denver Federal Executive Board by the Subcommittee to Expedite Energy Development, and for the Mountain Plains Federal Council by the Socioeconomic Impacts of Natural Resource Development Committee.

This study is divided into two parts. The first is a general summary of future fuels-related facilities in the Western United States by type of project and contains tabulations and summations of pertinent data. The second part lists future fuels-related projects by state and includes data on the company, location, capacity, planned markets, employment, water requirements, current status, initial operating date, and other relevant information for each project. State maps, with each project plotted thereon, accompany the listing of projects for each state. In addition, a list of data sources is included for each state and each project is keyed to the data sources from which information was obtained. The Appendix contains an explanation of the methods used in arriving at factors used for estimating certain data.

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Other significant contributions were made by the Bureau of Mines Mines Western Field Operations Center, Richard N. Appling, Jr., Chief; Raymond L. Lowrie, Chief, Intermountain Field Operations Center; and Luther Clemmer, Federal Energy Administration, Denver, Colorado.

SUMMARY OF FUELS-RELATED PROJECTS, PLANNED OR PROPOSED, IN THE WESTERN UNITED STATES

As of May 1976, a total of 515 fuels-related projects are planned, proposed, or under construction at locations in the 22 states west of the Mississippi River in the conterminous United States. These projects include future coal mines and expansions to existing mines, electric powerplants and expansions, coal conversion plants, waste-to-fuel conversion plants, oil shale projects, tar sands projects, potential geothermal facilities, coal slurry pipelines, future railroads related to fuels development, uranium mines, uranium mills and enrichment facilities, oil refineries, and natural gas processing plants. As shown in Table 1, 82 of these projects are planned for Colorado, 67 for Wyoming, 57 for Utah, and 54 for Texas. The balance is distributed among the other 18 states.

TABLE 1. - Number of future fuels -related projects by state

State	Number of projects	State	Number of projects
Arizona	11	Nebraska	5
Arkansas	5	Nevada	6
California	30	New Mexico	31
Colorado	82	North Dakota	19
Idaho	5	Oklahoma	19
Iowa	9	Oregon	23
Kansas	13	South Dakota	11
Louisiana	14	Texas	54
Minnesota	5	Utah	57
Missouri	13	Washington	15
Montana	21	Wyoming	67
		Total	515

Of the 515 future fuels-related projects listed in this report, 154 are new coal mines or expansions to existing mines and 185 are electric powerplants or planned expansions to existing plants. There are 40 planned uranium mines or expansions, and 22 coal conversion plants. The distribution by type of project is illustrated in Table 2 below.

TABLE 2. - Number of future fuels-related projects by type of facility

Type of facility	Number	Type of facility	Number
Coal mines and expansions	154	Coal slurry pipelines	8
Electric powerplants and expansions.	185	Railroads	7
Coal conversion plants	22	Uranium mines and expansions	40
Waste-to- fuel conversion plants.	6	Uranium mills and enrichment facilities.	9
Oil shale projects	10	Oil refineries	15
Tar sands projects	3	Natural gas processing plants.	18
Potential geothermal facilities.	38		
		Total	515

The following sections contain a general summary of the listing of future fuels-related projects by type of facility.

Coal Mines

As of May 1976, 154 future coal mines or expansions to existing mines are planned, proposed, or under development. As listed in Table 3, 45 mines are to be located in Colorado, 33 in Wyoming, 30 in Utah, and the balance in 10 other states. If all these future western mines were developed according to present plans, an additional 472.1 million tons per year of coal production would be realized. However, this production increase may not be a realistic estimate. Coal gasification markets account for 125 million tons per year of this total and other tonnages are dedicated to markets which may not develop in the near future.

TABLE 3. - Future coal mines and capacities by state

State	New mines		Expansions to existing mines		Totals	
	Number	Annual production increase[1]	Number	Annual production increase[1]	Number	Annual production increase[1]
Arizona	-	-	2	5.0	2	5.0
Arkansas	-	-	1	.1	1	.1
Colorado	[2] 37	38.8	8	6.8	45	45.6
Kansas	1	.25	-	-	1	.25
Iowa	-	-	1	.1	1	.1
Montana	[3] 6	19.0	3	29.2	9	48.2
New Mexico	3	34.0	5	43.7	8	77.7
North Dakota	[4] 5	34.0	4	8.6	9	42.6
Oklahoma	[5] 7	.25	-	-	7	.25
Texas	5	38.0	1	8.0	6	46.0
Utah	[6] 25	54.3	5	10.2	30	64.5
Washington	2	2.0	-	-	2	2.0
Wyoming	[7] 23	118.4	10	21.4	33	139.8
Total	114	339.0	40	133.1	154	472.1

[1]Annual production increase in million short tons per year.
[2]Includes 10 new mines with planned capacities unknown or unavailable.
[3]Includes 4 new mines with planned capacities unknown or unavailable.
[4]Includes 2 new mines with planned capacities unknown or unavailable.
[5]Includes 6 new mines with planned capacities unknown or unavailable.
[6]Includes 1 new mines with planned capacities unknown or unavailable.
[7]Includes 2 new mines with planned capacities unknown or unavailable.

Future mines in Wyoming will increase the production capacity by 139.8 million tons per year, while 77.7 million tons per year and 64.5 million tons per year are anticipated for New Mexico and Utah, respectively. The remaining increased production capacity is distributed among the other states.

Significantly, future capacities at 25 of the mines are unknown or unavailable. Any output from them would be in addition to the 472.1 million ton total.

Electric Powerplants and Expansions

As shown in Table 4, 185 electric powerplant projects and expansions totaling 383 individual generating units are planned for the Western United States. These include fossil fuel, nuclear, and hydropower generating stations. An additional 105 generating units are also planned but their locations are unknown at the present time. The highly populous states of Texas and California each have 23 projects planned, the balance being distributed among the other western states. If all these electrical generating units, both sited and unsited, were constructed, an additional 153,968 megawatts of generating capacity would be realized.

TABLE 4. - Future electric powerplants and capacities by state

State	Sited projects			Unsited projects		Total projects	
	Total projects	Total units	Capacity, megawatts	Total units	Capacity, megawatts	Total units	Capacity, megawatts
Arizona.....	8	17	7,185	2	181	19	7,366
Arkansas.....	3	4	2,878	8	3,365	12	6,243
California...	23	66	15,156	39	3,742	105	18,898
Colorado.....	9	16	4,471	2	1,000	18	5,471
Idaho.....	3	6	1,318	-	-	6	1,318
Iowa.....	8	11	3,031	7	1,375	18	4,406
Kansas.....	12	19	5,891	2	46	21	5,937
Louisiana....	7	11	6,455	-	-	11	6,455
Minnesota....	5	8	4,308	-	-	8	4,308
Missouri.....	13	21	5,711	18	1,370	39	7,081
Montana.....	7	20	4,047	1	350	21	4,397
Nebraska.....	5	6	3,217	5	1,000	11	4,217
Nevada.....	2	6	2,500	-	-	6	2,500
New Mexico...	1	3	1,340	-	-	3	1,340
North Dakota	5	8	2,688	2	132	10	2,820
Oklahoma.....	8	12	4,751	7	2,200	19	6,951
Oregon.....	6	8	4,409	-	-	8	4,409
South Dakota	8	8	1,308	-	-	8	1,308
Texas.....	23	46	22,907	12	4,900	58	27,807
Utah.....	11	22	9,904	-	-	22	9,904
Washington...	11	54	15,838	-	-	54	15,838
Wyoming.....	7	11	4,994	-	-	11	4,994
Total...	185	383	134,307	105	19,661	488	153,968

TABLE 5. - Future coal conversion plants and capacities by state

State	Total projects	Total units	Gasification		Liquefaction		Other	
			Total units	Capacity[1]	Total units	Capacity[1]	Total units	Capacity[1]
Colorado.....	1	1	1	250	-	-	-	-
Montana.....	4	9	5	1,400	3	150	1	[2] 1,000
New Mexico.....	2	6	6	1,785	-	-	-	-
North Dakota.....	[3] 5	[3] 12	[3] 12	2,125	-	-	-	-
South Dakota.....	2	2	1	2	-	-	[4] 1	-
Texas.....	1	1	1	([5])	-	-	-	-
Utah.....	1	1	1	864	-	-	-	-
Wyoming.....	6	7	6	1,300	-	-	[6] 1	-
Totals.....	22	39	33	7,726	3	150	3	-

[1]Capacity listed in million cubic feet per day for coal gasification and in thousand barrels per day for coal liquefaction.
[2]Tons per day of anhydrous ammonia.
[3]Includes two projects which have not disclosed plans at the present time.
[4]Pilot gasification project for power plant consumption.
[5]Unknown.
[6]U.S. ERDA in-situ pilot gasification project.

Coal Conversion Plants

Twenty-two coal conversion projects under consideration or planning have been identified. Considerable uncertainties exist as to how many of these plants will be constructed. If all the projects identified were constructed, daily capacities from gasification and liquefaction plants would be 7.73 billion cubic feet and 150 thousand barrels in the eight states listed in Table 5.

Waste-to-Fuel Conversion Plants

Six waste-to-fuel conversion projects are planned in the west as of May 1976. Four waste-to-gas or oil projects are to be located in Colorado, one solid waste-to-oil project is planned for Oregon, and one waste-to-heat project will be located in Utah.

Oil Shale Projects and Tar Sands Projects

A total of 10 oil shale projects, 7 in Colorado and 3 in Utah, have been identified. As shown in Table 6, these projects represent a planned total capacity of 480.5 thousand barrels per day.

TABLE 6. - Future oil shale projects by state

State	Number of projects	Capacity[1]
Colorado.....	7	355.5
Utah.....	[2] 3	125
Totals.....	10	480.5

[1]Thousand barrels per day.
[2]Includes one pilot facility.

Although the outlook is not particularly promising, three tar sands projects of different capacities are planned for Utah.

Potential Geothermal Facilities

Thirty-eight areas, located in seven western states, are now under lease or are being explored for geothermal resources. It must be emphasized that geothermal exploration and leasing will not necessarily lead to the development of geothermal resources of commercial quantity and quality. To be sure, many of these 38 areas will prove to have no commercial resources and thus many of them cannot be considered a future fuels-related facility as such. However, these areas are included in the

report for the purpose of illustrating the extent of geothermal resource exploration and the current status of the geothermal industry in the Western United States.

Only the Geysers area in California currently is utilizing geothermal steam for electricity generation. Future additions in generating capacity at the Geysers area are planned. Table 7 lists the number of geothermal resource areas under lease or in the exploration stage by state.

Table 7. - Potential geothermal facilities by state

State	Total areas under exploration or development
California	5
Colorado	11
Idaho	2
Nevada	4
New Mexico	2
Oregon	12
Utah	2
Total	38

Coal Slurry Pipelines

As shown in Table 8, eight coal slurry pipelines are planned to originate in the Western United States as of May 1976. Total length of these pipelines would exceed 4,700 miles and total capacity could exceed 94 million tons of coal per year. Construction of these pipelines would be facilitated by passage of federal and state legislation authorizing, under conditions, use of eminent domain powers.

TABLE 8. - Future coal slurry pipelines by state of origin

State of origin	Number of pipelines	Capacity, million tons per year	Total length, miles
Colorado	2	10.0	823
Montana	1	22.0 - 29.0	1,260
New Mexico	2	9.0	247
Utah	[1] 1	11.4	240
Wyoming	2	35.0	2,136
Totals	8	87.4 - 94.4	4,706

[1] Parallel pipelines to two destinations.

Railroads Related to Fuels Development

Seven proposed railroad lines related to fuels development have been identified. Only those greater than 15 miles in length are included. As illustrated in Table 9, the seven railroad lines planned for location in five western states would total 543 miles in length.

TABLE 9. - Future railroads related to development by state

State	Number of railroads	Total length, miles
Arizona.....	1	40
Colorado.....	2	50
New Mexico.....	1	72
Utah.....	2	255
Wyoming.....	1	126
Totals.....	7	543

Uranium Mines, Mills, and Enrichment Facilities

As of May 1976, 40 new uranium mines or expansions to existing mines are planned in seven western states. Twelve of these mines will be located in New Mexico, and 11 each in Texas and Wyoming. Eight new mills or expansions, and one uranium enrichment facility in New Mexico, are planned for location in three western states as shown in Table 10. No planned capacity estimates are available.

TABLE 10. - Future uranium mines, mills, and enrichment facilities by state

State	Total new mines or expansions	Total new mills or expansions
Colorado.....	1	-
New Mexico.....	12	[1]3
Oregon.....	1	-
Texas.....	11	-
Utah.....	3	-
Washington.....	1	1
Wyoming.....	11	5
Totals.....	40	9

[1]Includes one new uranium enrichment plant.

Oil Refineries and Natural Gas Processing Plants

Plans for 15 new oil refineries or expansions and 18 new natural gas processing plants or expansions have been identified. The refineries will account for an additional throughput capacity of 1.377 million barrels per day; the natural gas processing plants represent an additional throughput capacity of 2.472 billion cubic feet per day in addition to 1.4 billion cubic feet of storage capacity. The number of projects and the corresponding capacities are listed in Table 11.

TABLE 11. - Future oil refineries and natural gas processing plants by state

State	Oil refineries		Natural gas processing plants	
	Number	Capacity[1]	Number	Capacity[2]
Arkansas	-	-	1	30
California	2	350	-	-
Louisiana	2	235	5	1,610
Oklahoma	1	15	3	242
Oregon	2	86	1	([3])
South Dakota	-	-	1	([3])
Texas	7	688	6	530
Wyoming	1	3	1	60
Totals	15	1,377	18	2,472

[1]Additional throughput capacity in thousand barrels per day.
[2]Additional throughput capacity in million cubic feet per day.
[3]Liquefied natural gas plant for natural gas storage. Total storage capacity for both plants is 1.4 billion cubic feet.

A LISTING OF FUTURE FUELS -RELATED PROJECTS IN THE WESTERN UNITED STATES

Arizona

Data on the Arizona projects listed below are presented in Tables 12 through 14. The map reference numbers correspond to the accompanying map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Black Mesa	Peabody Coal Company
S2	Kayenta	Do.
Electric powerplants:		
E1	Cholla Nos. 2-4	Arizona Public Service Co.
E2	Navajo No. 3	Salt River Project
E3	West Phoenix Nos. 1-3	Arizona Public Service Co.
E4	Snowflake	Southwest Forest Industries
-	Unsited, 1 unit	Salt River Project
E5	Axis No. 1	Southern California Edison
E6	Apache Station Nos. 5 and 6	Arizona Electric Power Coop.
E7	Coronado Nos. 1-3	Salt River Project
-	Unsited, 1 unit	Arizona Public Service Co.
E8	Palo Verde Nos. 1-3	Do.
Railroads:		
1	Coronado Project Spur	Salt River Project

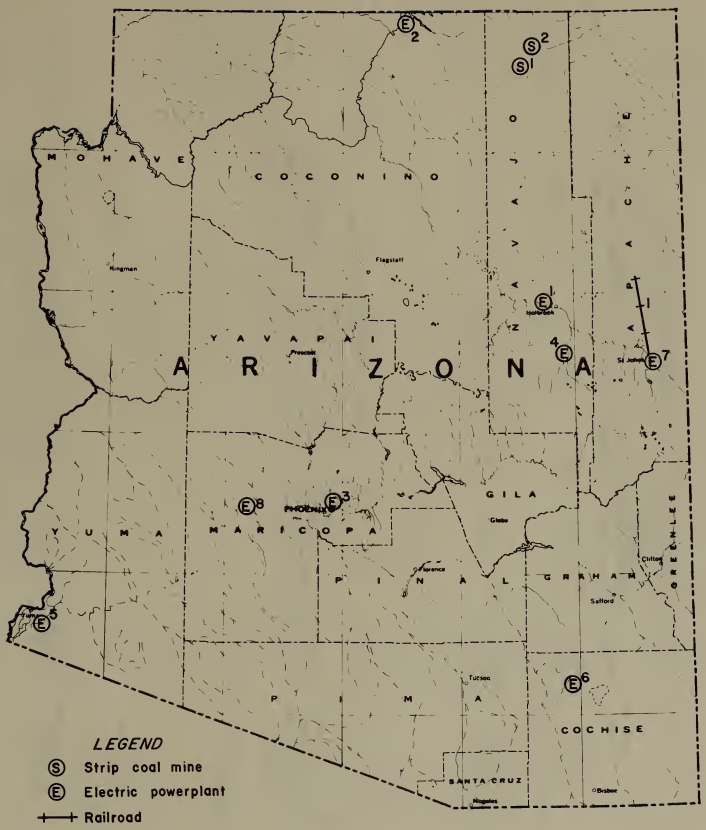

FIGURE 1. - Future fuels-related projects in Arizona.

TABLE 12. - Future coal mines in Arizona

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis		Seam thickness, feet	Depth or overburden thickness, feet	Employment		Remarks	Data source
										Present	Maximum		
S1	Black Mesa northern Navajo Co.	Peabody Coal Company, St. Louis, MO	Strip	5.0 - 1977 (expansion)	Mohave power-plant	Ash- Sulfur- Btu/lb-11,000	8.0% 0.5%	4 - 30	130 maximum	157	305	1975 production estimated at 3 million tons.	1
S2	Kayenta northern Navajo Co.	Peabody Coal Company, St. Louis, MO	Strip	8.0 - 1977 (expansion)	Navajo power-plant	Ash- Sulfur- Btu/lb-11,000	8.0% 0.5%	4 - 30	130 maximum	111	444	1975 production estimated at 5 million tons.	1

TABLE 13. - Future electric powerplants in Arizona

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Megawatts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Cholla Nos. 2-4 Joseph City, Navajo County	Arizona Public Service Co., Phoenix, AZ	Coal - 3.6 (total, all units)	2 3 4 Total	250 250 350 850	2 3 4	June 1978 June 1979 June 1980	Total	500	120	Additions to 115 MW first unit. Water requirements from man-made Cholla Lake are estimates at 15,700 acre-feet per year for all four units. Coal will be supplied by Pittsburg & Midway's McKinley mine near Gallup, NM.	2,3,6
E2	Navajo No. 3 Page, Coconino County	Salt River Project, Phoenix, AZ	Coal - e3.0		750		Apr. 1976		e750	e94		2
E3	West Phoenix Nos. 1-3, Phoenix, Maricopa County	Arizona Public Service Co., Phoenix, AZ	Fuel oil	1 2 3 Total	75 75 74 225	1 2 3	June 1976 June 1976 June 1976	Total	e245	e31		2,6

TABLE 13. - Future electric powerplants in Arizona--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment		Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion / Operation		
E4	Snowflake Snowflake, Navajo County	Southwest Forest Industries	Coal - e0.4		125		1976		e125 / e16		2
--	Unsited	Salt River Project, Phoenix, AZ	Gas/oil		61		1977		e60 / e8		2
E5	Axis No. 1 Yuma, Yuma County	Southern California Edison, Rosemead, CA	Fuel oil		25		Apr. 1978		e25 / e3		2
E6	Apache Nos. 5, 6 Cochise, Cochise County	Arizona Electric Power Cooperative, Benson, AZ	Coal - e1.1 (total, all units)	5	175	5	June 1978	5	e175 / e22		2
				6	175	6	June 1979	6	e175 / e22		
				Total	350						
E7	Coronado Nos. 1-3 St. Johns, Apache County	Salt River Project, Phoenix, AZ	Coal - 3.0 (total, all units)	1	350	1	Apr. 1979	Total	e700 / e130	Peabody's proposed Star Lake, NM mine will supply coal.	2,4,6
				2	350	2	Apr. 1980				
				3	350	3	May 1982				
--	Unsited	Arizona Public Service Co., Phoenix, Az	Fuel oil		120		June 1980		e120 / e15		2
E8	Palo Verde Nos. 1-3 Wintersburg, Maricopa County	Arizona Public Service Co., Phoenix, AZ	Nuclear	1	1,270	1	May 1982	1	e1,240 / e155		2,5,6
				2	1,270	2	May 1984	2	e1,240 / e155		
				3	1,270	3	May 1984	3	e1,240 / e155		
				Total	3,810						

e Estimated, see appendix for explanation.

TABLE 14. - Future railroads (related to fuels development) in Arizona

Map ref. no.	Operating company	Proposed route: Origin	Proposed route: Destination	Length, miles	Type	Initial operating date	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Salt River Project, Phoenix, AZ	St. Johns, Apache County	Navajo, Apache County	40	Spur	1979			Spur line from proposed Coronado powerplant to Santa Fe mainline at Navajo.	4

List of Data Sources for Arizona

1. U.S. Bureau of Mines State Liaison Office, Phoenix, Ariz.

2. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362; Order 383-3.

3. U.S. Department of Agriculture, Forest Service. Cholla Powerplant Environmental Impact Statement, 1975.

4. Coal Age. Peabody and Santa Fe Railroad Units Set Coal Supply for Salt River Project, September 1975.

5. U.S. Energy Research and Development Administration. Eleven Nuclear Power Reactors Announced in 1975. News release, January 26, 1976.

6. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

Arkansas

Data on the Arkansas projects listed below are presented in Tables 15 through 17. The map reference numbers correspond to the accompanying Arkansas map.

Map ref. no.	Project name	Company or agency
Coal mines:		
U1	SP-7	Sugarloaf Mining Company
Electric powerplants:		
E1	Arkansas Nuclear One No. 2	Arkansas Power & Light Co.
E2	Flint Creek No. 1	Southwest Electric Power Co.
E3	White Bluff Nos. 1 and 2	Arkansas Power & Light Co.
-	Unsited, 6 units	Arkansas Electric Coop. Corp.
-	Unsited, 2 units	Arkansas Power & Light Co.
Natural gas processing plants:		
R1	Walker Creek	Beacon Gasoline Company

FIGURE 2. - Future fuels-related projects in Arkansas.

TABLE 15. - Future coal mines in Arkansas

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U1	SP-7 Southeast of Hartford, Sebastian County	Sugarloaf Mining Co., Ft. Smith, AR (a subsidary of National Steel)	Underground	0.2-1977	Steel Mills		3.5-6.0 (Lower Hartshorne)	500-1,000	10	e69		1

e Estimated, see appendix for explanation.

TABLE 16. - Future electric powerplants in Arkansas

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Arkansas Nuclear-One No. 2 Russellville, Pope County	Arkansas Power & Light Co., Little Rock, AR	Nuclear		950	2	Mar. 1978	2	980	185	Arkansas River will be water source.	2
E2	Flint Creek No. 1 Siloam Springs, Benton County	Southwestern Electric Power Co., Shreveport, LA	Coal-e1.7		528		May 1978		e530	e66	Coal will be supplied by the AMAX Belle Ayr mine in Wyoming.	2
E3	White Bluff Nos. 1 & 2 Redfield, Jefferson County	Arkansas Power & Light Company, Little Rock, AR	Coal-e5.0 (total, both units)	1 2 Total	700 700 1,400	1 2	Apr. 1979 Jan. 1981	1 2	1,070 1,070	250 250	Coal will be supplied by the Kerr-McGee Jacobs Ranch mine in Wyoming.	2
--	Unsited Nos. 1-6	Arkansas Electric Cooperative Corp., Little Rock, AR	Coal-e6.4 (total, all units)	1 2 3 4 5 6 Total	300 300 500 265 300 300 1,965	1 2 3 4 5 6	June 1978 June 1979 June 1981 June 1982 June 1982 June 1983	1 2 3 4 5 6	e300 e300 e500 e265 e300 e300	e38 e38 e62 e33 e38 e38	Site and plans are unknown. Units are reported to FPC as projected additions to generating capacity of company. Plants will not necessarily be located at the same site.	2

TABLE 16. - Future electric powerplants in Arkansas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
--	Unsited Nos. 1 & 2	Arkansas Power & Light Company, Little Rock, AR	Coal-[e]5.0 (total, both units)	1 2 Total	700 700 1,400	1 2	Jan. 1983 Jan. 1985	1 2	1,070 1,070	250 250	Site and plans are unknown. Units are reported to FPC as projected additions to generating capacity of the company.	2

[e] Estimated, see appendix for explanation.

TABLE 17. - Future natural gas processing plants in Arkansas

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment		Remarks	Data source
					Construc-tion	Opera-tion		
R1	Walker Creek Gasoline Co. near Taylor, Columbia County (T 19S, R 23W)	Beacon Gasoline Co., Taylor, AR	Apr. 1976	30		25	Will produce 72,000 gallons of gasoline per day at full operation.	3

List of Data Sources for Arkansas

1. U.S. Bureau of Mines State Liaison Office, Little Rock, Ark.

2. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

3. Arkansas Oil & Gas Commission, El Dorado, Ark.

California

Data on the California projects listed below are presented in Tables 18 through 20. The map reference numbers correspond to the accompanying California map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E 1	Grayson Nos. 8-10	City of Glendale
E 2	Diablo Canyon Nos. 1 and 2	Pacific Gas & Electric Co.
E 3	Coachella No. 4	Imperial Irrigation District
E 4	Oakland No. 4	Pacific Gas & Electric Co.
E 5	Portable Turbine Nos. 1-3	Do.
E 6	Castaic Nos. 3-6	Los Angeles Department of Water & Power
E 7	Long Beach Nos. 1B-7B	Southern California Edison
E 8	Geysers Nos. 12-15	Pacific Gas & Electric Co.
E 9	Cool Water Nos. 3 and 4	Southern California Edison
E10	Encina No. 5	San Diego Gas & Electric Co.
-	Unsited, 2 units	Imperial Irrigation District
E11	New Melones Nos. 1 and 2	U.S. Bureau of Reclamation
E12	South Bay Nos. 2 and 3	San Diego Gas & Electric Co.
-	Unsited, 7 units	Southern California Edison
E13	Unnamed, 7 units	Pacific Gas & Electric Co.
E14	Portrero Nos. 7A and 7B	Do.
E15	Big Creek	Southern California Edison
E16	Lucerne Valley Nos. 1-5 and combined cycles 1-5.	Do.
-	Unsited, 13 units	Pacific Gas & Electric Co.
-	Unsited, 15 units	Southern California Edison
E17	Helms Nos. 1-3	Pacific Gas & Electric Co.
E18	San Onofre Nos. 2 and 3	Southern California Edison
-	Unsited	Pacific Gas & Electric Co.
E19	Cottonwood No. 1	California State Department of Natural Resources
E20	Auburn Nos. 1 and 2	U.S. Bureau of Reclamation
E21	Rancho Seco No. 2	Sacramento Municipal Utilities District
E22	San Joaquin No. 1	Los Angeles Department of Water & Power
-	Unsited	Pacific Gas & Electric Co.
E23	Sundsert Nos. 1 and 2	San Diego Gas & Electric Co.

Map ref. no.	Project name	Company or agency
Potential geothermal facilities:		
G1	Geysers area	Various
G2	Calistoga area	Do.
G3	Susanville area	Do.
G4	Long Valley area	Do.
G5	Imperial Valley area	Do.
Oil refineries:		
R1	Richmond	Standard Oil of California
R2	El Segundo	Do.

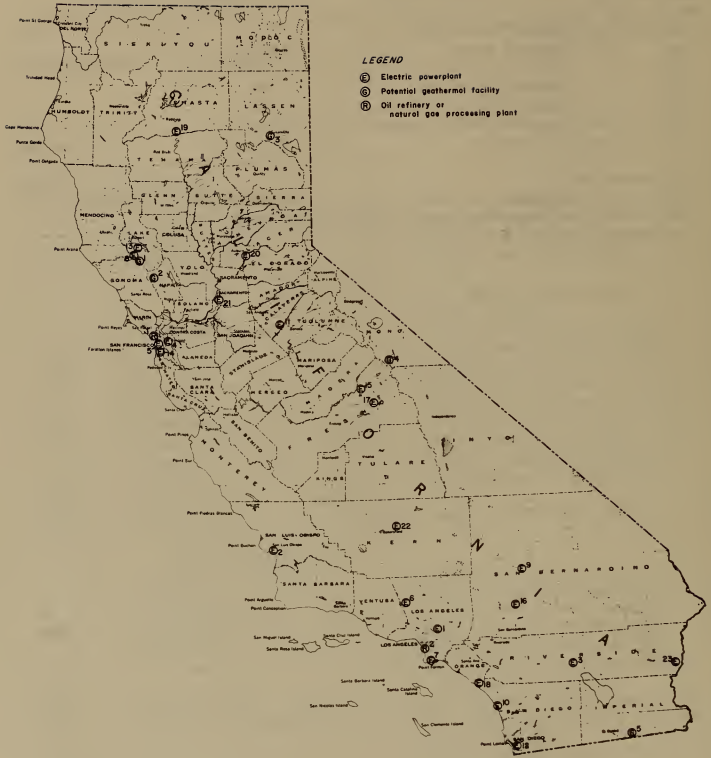

FIGURE 3. - Future fuels-related projects in California.

TABLE 18. - Future electric powerplants in California

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E1	Grayson Nos. 8-10 Glendale, Los Angeles County	City of Glendale, Glendale, CA	Fuel oil	8	99	8	June 1977	8	e100	e12		1,2,6
				9	50	9	June 1979	9	e50	e6		
				10	60	10	June 1981	10	e60	e8		
				Total	209							
E2	Diablo Canyon Nos. 1 & 2 Avila Beach, San Luis Obispo County	Pacific Gas & Electric Co., San Francisco, CA	Nuclear	1	1,060	1	Aug. 1976	1	e1,060	e133	Units 1 and 2 will be uprated to 1,120 MW and 1,150 MW, respectively, in March 1979. Pacific Ocean is planned water source.	1,2,6
				2	1,060	2	Aug. 1977	2	e1,060	e133		
				Total	2,120							
E3	Coachella, No. 4 Coachella, Riverside County	Imperial Irrigation District, Imperial, CA	Fuel oil		20		June 1976		e20	e3		1,2
E4	Oakland Nos. 1-3 Oakland, Alameda County	Pacific Gas & Electric Co., San Francisco, CA	Fuel oil	1	57	1	July 1977	1	e60	e7		1,2,6
				2	57	2	July 1977	2	e60	e7		
				3	87	3	July 1977	3	e90	e11		
				Total	201							
E5	Portable Turbine Nos. 1-3, San Francisco, CA	Pacific Gas & Electric Co., San Francisco, CA	Fuel oil	1	17	1	June 1976	1	e15	e2		1,2,6
				2	16	2	June 1978	2	e15	e2		
				3	17	3	June 1980	3	e15	e2		
				Total	50							
E6	Castaic Nos. 3-6 Castaic, Los Angeles County	Los Angeles Department of Water and Power, Los Angeles, CA	Hydropower (pump storage)	3	235	3	July 1976	3	e235	e30		1,2,6
				4	215	4	Apr. 1977	4	e215	e27		
				5	185	5	Jan. 1978	5	e185	e23		
				6	135	6	Oct. 1978	6	e135	e17		
				Total	770							

TABLE 18. - Future electric powerplants in California--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E7	Long Beach Nos. 1B-7B Long Beach, Los Angeles County	Southern California Edison, Rosemead, CA	Fuel oil	1B	63	1B	Sep. 1976	Total	e440	e55		1,2,6
				2B	63	2B	Sep. 1976					
				3B	63	3B	Oct. 1976					
				4B	63	4B	Nov. 1976					
				5B	63	5B	Dec. 1976					
				6B	63	6B	Jan. 1977					
				7B	63	7B	Feb. 1977					
				Total	441							
E8	Geysers Nos. 12-15 S. of Clear Lake, Lake County	Pacific Gas & Electric Co., San Francisco, CA	Geothermal	12	106	12	Mar. 1978	Total	e400	e50		1,2,6
				13	135	13	Feb. 1979					
				14	110	14	Nov. 1978					
				15	55	15	Sep. 1978					
				Total	406							
E9	Cool Water Nos. 3 & 4 Daggett, San Bernardino County	Southern California Edison, Rosemead, CA	Fuel oil	3	236	3	Apr. 1978	3	e235	e30		1,2,6
				4	236	4	Aug. 1978	4	e235	e30		
				Total	472							
E10	Encina No. 5 Carlsbad, San Diego County	San Diego Gas & Electric Co., San Diego, CA	Fuel oil		292		Oct. 1978		e290	e37		1,2,6
--	Unsited, 2 units	Imperial Irrigation District, Imperial, CA	unknown	1	50	1	June 1980	1	e50	e6	Site and plans unknown.	1,2,6
				2	50	2	June 1983	2	e50	e6	Units reported to FPC as projected additions to company capacity. Units will not necessarily be constructed at the same site.	
				Total	100							
E11	New Melones Nos. 1 & 2 Melones, Calaveras County	U.S. Bureau of Reclamation, Central Valley Project	Hydropower	1	150	1	June 1979	Total	e300	e38		1,2,6
				2	150	2	June 1979					
				Total	300							

TABLE 18. - Future electric powerplants in California--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E12	South Bay Nos. 2 & 3 Chula Vista, San Diego County	San Diego Gas & Electric Co., San Diego, CA	Fuel oil	2	64	3	June 1979	Total	e130	e16		1,2,6
				3	64	4	June 1979					
				Total	128							
--	Unsited, 7 units	Southern California Edison, Rosemead, CA	Fuel oil	1	53	1		Total	e377	e47	Site and plans are unknown. Projects are delayed beyond 1985.	1,2,6
				2	54	2			e55			
				3	54	3			e55			
				4	54	4						
				5	54	5						
				6	54	6						
				7	54	7						
				Total	377							
E13	Unnamed, 7 units Geysers area, Lake County	Pacific Gas & Electric Co., San Francisco, CA	Geothermal	1	110	1	July 1979	1	e110	e14	Probable additions to Geysers area. Well drilling and plant construction stopped in 1975 until environmental conflicts between County, State, and Federal Agencies are resolved.	1,2,6
				2	110	2	July 1980	2	e110	e14		
				3	110	3	July 1981	3	e110	e14		
				4	110	4	July 1982	4	e110	e14		
				5	110	5	July 1983	5	e110	e14		
				6	110	6	July 1984	6	e110	e14		
				7	110	7	July 1985	7	e110	e14		
				Total	770							
E14	Portrero Nos. 7A & 7B San Francisco, CA	Pacific Gas & Electric Co., San Francisco,	Fuel oil	7A	240	7A	Dec. 1980	Total	e600	e75		1,2,6
				7B	360	7B	May 1981					
				Total	600							
E15	Big Creek near Huntington Lake, Fresno County	Southern California Edison, Rosemead, CA	Hydropower		31		Mar. 1980		e30	e4		1,2,6
E16	Lucerne Valley Nos. 1-5 and Combined Cycle additions 1-5 Lucerne Valley, San Bernardino County	Southern California Edison, Rosemead, CA	Fuel oil	1	60	1	Feb. 1981	1	e60	e7	Five combined cycle additions, each 60 MW, will be added between February and June 1985.	1,2,6
				2	120	2	Mar. 1981	2	e120	e15		
				3	120	3	Apr. 1981	3	e120	e15		
				4	120	4	May 1981	4	e120	e15		
				5	120	5	June 1981	5	e120	e15		
				Total	540							
			Combined Cycle	1-5	300		1985					

TABLE 18. - Future electric powerplants in California--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
--	Unsited, 13 units	Pacific Gas & Electric Co., San Francisco, CA	Fuel oil	1-3 4 5-8 B4 B5-B8 Total	225 75 300 75 300 975	1-3 4 5-8 B4 B5-B8	July 1980 July 1982 July 1983 July 1983 July 1984	1-3	[e]225 [e]75 [e]300 [e]75 [e]300	[e]28 [e]9 [e]38 [e]9 [e]38	Site and plans for the 13 units cannot be determined at the present time. Units will not necessarily be constructed at the same site.	1,2,6
--	Unsited, 15 units	Southern California Edison, Rosemead, CA	Fuel oil (Fuel Cell)	1-15	390		1981-1982	Total	[e]390	[e]49	Site and plans cannot be determined at the present time. Each is 26 MW.	1,2,6
E17	Helms Nos. 1-3 Wishon Reservoir, Fresno County	Pacific Gas & Electric Co., San Francisco, Ca	Hydropower (pump storage)	1 2 3 Total	375 375 375 1,125	1-3	June 1981	1-3	[e]1,125	[e]140		1,2,6
E18	San Onofre Nos. 2 & 3 San Clemente, Orange County	Southern California Edison, Rosemead, CA	Nuclear	2 3 Total	1,100 1,100 2,200	2 3	Oct. 1981 Jan. 1983	2 3	[e]1,100 [e]1,100	[e]138 [e]138	Pacific Ocean is planned water source.	1,2,6
--	Unsited	Pacific Gas & Electric Co., San Francisco, CA	Coal-[e]2.6		800		July 1983		[e]800	[e]80	Site and plans unknown. Possible coal-fired unit. Coal would be supplied by proposed Island Creek Coal Company mine in Utah.	1,2,6
E19	Cottonwood No. 1 Cottonwood, Shasta County	California State Department of Water Resources	Hydropower		15		Sep. 1981		[e]15	[e]2		1,2,6

TABLE 18. - Future electric powerplants in California--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E20	Auburn Nos. 1 & 2 Auburn, Placer County	U.S. Bureau of Reclamation, Central Valley Project	Hydropower	1 2 Total	150 150 300	1 2	June 1983 June 1983	Total	e300	e38		1,2,6
E21	Rancho Seco No. 2 Clay Station, Sacramento County	Sacramento Municipal Utilities District, Sacramento, CA	Nuclear		1,100		July 1983		e1,100	e137	Sacramento River is planned water source.	1,2
E22	San Joaquin No. 1, E. of Hillcrest Center, Kern County	Los Angeles Dept. of Water & Power Los Angeles, CA	Nuclear		1,300		Dec. 1984		e1,300	e163		1,2,6
--	Unsited	Pacific Gas & Electric Co., San Francisco, CA	Nuclear		1,100		July 1985		e1,100	e137		1,2,6
E23	Sundsert Nos. 1 & 2 Blythe, Riverside County	San Diego Gas & Electric Co., San Diego, CA	Nuclear	1 2 Total	950 950 1,900	1 2	May 1985 1987	1 2	e950 e950	e120 e120		4,6

e Estimated, see appendix for explanation.

TABLE 19. - Potential geothermal facilities in California

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	The Geyers area, Lake and Sonoma Counties	Pacific Gas & Electric Co. San Francisco, CA and others	Pacific Gas and Electric Co. currently has 11 units with a total of 500 MW of installed electric generating capacity. Unit Nos. 12-15, totaling 406 MW, will be installed in 1977 and 1978. Step-out drilling will continue as well as redrilling in productive areas. Development will probably exceed 1,500 MW and may reach 2,500 MW by 1985. Developed field may exceed 25-30 square miles. Wells are drilled by Union Oil Co., Thermal Power Co., Pacific Energy Co., Burmah Oil Co., Shell Oil Co., Sun Oil Co., and others. Well drilling and plant construction was suspended in 1975 until conflicts with environmental agencies can be resolved.	3
G2	Near Calistoga, Napa County		Presently, 60 wells producing hot water for space heating in a 3 square mile area. Drilling will continue for space-heating sources with possible deep drilling to test higher enthalpy required in 1977-1979 time period. The future of the project is dependent upon a federal grant.	3
G3	Near Susanville, Lassen County		Publicly sponsored research into large-scale development of hot water heating system. Continued drilling is planned through 1979 with possible construction of pilot facilities to test development suitability after 1980. The future of the project is dependent upon a federal grant. Phillips Petroleum test well resulted in a dry hole.	3
G4	Long Valley, Mono County	Magma Power Co. Los Angeles, CA	Ten holes have been drilled. Drilling is delayed because of environmental and leasing questions. Continued drilling and testing of wells expected through 1979, with possible powerplant construction during the 1980-1985 period. Some dry holes have resulted on the leases.	3
G5	Imperial Valley, Imperial County	Chevron, Magma Power, Phillips, Southern Pacific, U.S. Bureau of Reclamation	Four areas presently being tested for development: Heber, Brawley, Niland, and East Mesa. Construction of binary-cycle plant at Heber (20MW) is possible by 1979. Possibilities of desalination pilot plant at East Mesa as well as powerplants at Brawley and Niland exist. ERDA and the U.S. Bureau of Reclamation plan to construct a geothermal test facility at East Mesa where industry can test equipment for converting geothermal resources into useful energy forms. In addition to the above, exploratory drilling may take place near the following California locations before 1978: Coso, Borax Lake, Bieber, Wilbur Springs, and Surprise Valley.	3

TABLE 20. - Future oil refineries in California

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak Employment		Remarks	Data source
					Construc-tion	Opera-tion		
R1	Richmond Refinery Richmond, Marin County	Standard Oil of California	1976	175,000 (expansion)			Plant expansion to 365,000 barrels per day total capacity.	5
R2	El Segundo Refinery El Segundo, Los Angeles County	Standard Oil of California	1976	175,000 (expansion)			Plant expansion to 405,000 barrels per day total capacity.	5

List of Data Sources for California

1. Western Systems Coordinating Council. WSCC Ten-Year Coordinated Plan Summary, 1975-1984, May 1975.

2. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

3. Current Status of the Geothermal Industry in the U.S. A document obtained by the U.S. Bureau of Mines, Colorado State Liaison Office, from George Nielsen, U.S. Bureau of Land Management.

4. U.S. Energy Research and Development Administration. Eleven Nuclear Power Reactors Announced in 1975. News Release, January 26, 1976.

5. Oil and Gas Journal. April 21, 1975.

6. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

Colorado

Data on the Colorado projects listed below are presented in Tables 21 through 29. The map reference numbers correspond to the accompanying Colorado map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S 1	Watkins	Cameron Engineers
S 2	Unnamed	Kerr-McGee Corp.
S 3	Mel Martinez	Milton Fuller
U 4	Farmers	Pittsburg & Midway Coal Co.
U 5	King	Adolph Coors Company
U 6	Converse	Colorado Westmoreland
U 7	Old Blue Ribbon	Sunflower Energy Corp.
U 8	Coalby No. 2	Coalby Mining Company
S 9	Station Creek	Cameron Engineers
U10	Unnamed	Atlantic Richfield Co.
U11	Hawks Nest East	Western Slope Carbon, Inc.
S12	Grizzly Creek	Sunflower Energy Corp.
S13	Unnamed	Consolidation Coal Co.
U14	...do	Energy Resources, Ltd.
U15	...do	Tipperary Oil & Gas Corp.
U16	Lorencito	Freeport Coal Co.
U17	Maxwell	CF&I Steel Corp.
U18	McGinley	Eagle Head Coal Co.
U19	McKinley No. 1	Energy & Export Company, Ltd.
U20	CMC mine	Cambridge Mining Corp.
U21	CMC No. 1	Do.
U22	Wise Hill Nos. 5, 6, and 7	Empire Energy Corp.
S23	Colowyo	W. R. Grace and Hanna Mining Co.
S24	Unnamed	Utah International, Inc.
U25	...do	Kemmerer Coal Co.
S26	...do	Blue Mountain Coal Co.
S27	Wilson Creek	Utah International, Inc.
S28	Unnamed, 2 mines	Paul S. Coupey
S29	Unnamed	H. W. Siddle
U30	Thompson Creek Nos. 1-3	Anschutz Coal Co.
U31	Gordon	Moon Lake Electric Co.
U32	Rienau No. 2	American Fuels, Inc.
U33	Unnamed	Consolidation Coal Co.
S34	...do	Merchants Petroleum Co.
S35	...do	Thomas C. Woodward
S36	...do	Midland Coal Co.
S37	Edna	Pittsburg & Midway Coal Co.

Map ref. no.	Project name	Company or agency
Coal mines--Continued:		
S38	Seneca 2-w	Peabody Coal Co.
S39	Energy Nos. 1 and 2	Energy Fuels Corp.
U40	Sun	Ruby Construction
U41	Unnamed	Coal Fuels
S42	...do	American Electric Power System
S43	...do	Morgan Coal Co.
U44	Lincoln	Adolph Coors Co.
S45	Unnamed	Groves/Calder
Electric powerplants:		
E 1	Comanche No. 2	Public Service Company of Colorado
E 2	Hayden No. 2	Salt River Project
E 3	Morrow Point No. 2	U.S. Bureau of Reclamation
E 4	Crystal No. 1	Do.
E 5	Mt. Elbert Nos. 1 and 2	Do.
E 6	Craig (Yampa) Nos. 1-4	Colorado-Ute Electric Association
-	Future Nos. 1 and 2	Public Service Company of Colorado
E 7	Pawnee Nos. 1 and 2	Public Service Company of Colorado
E 8	Nixon Nos. 1-3	City of Colorado Springs
E 9	Hatch Flats	Moon Lake Electric Co.
Coal conversion plants:		
C1	Watkins Lignite	Mintech Corp.
Waste-to-energy conversion plants:		
N1	Unnamed	Energy Conversion Systems, Inc.
N2	Monfort Feedlot	Bio-Gas, Inc.
N3	TOSCO Pilot	TOSCO
N4	Unnamed	Energid Corp.

Map ref. no.	Project name	Company or agency
Oil shale projects:		
01	Parachute Creek	Colony Development
02	Rio Blanco	Gulf Oil Corp., Standard of Indiana
03	C-B Project	Shell Oil Co., Ashland Oil Co.
04	Union Oil Project	Union Oil Co.
05	Roan Creek	Occidental Oil Shale, Inc.
06	Paraho	Paraho Oil Shale Demonstration, Inc.
07	Superior Oil project	Superior Oil Co.
Potential geothermal facilities:		
G1-G11	various geothermal lease application areas	
Coal slurry pipelines:		
1	Walsenburg to Houston, TX	Houston Natural Gas Co., and DRGW Railroad
2	CMC mine to Cameo powerplant	Cambridge Mining Corp.
Railroads:		
1	Craig to Axial Basin	Denver & Rio Grande Western
2	Axial Basin extension	Do.
Uranium mines:		
M1	Weld County exploration	Wyoming Minerals Corp., Power Resources Co., and Aquarius Corp.

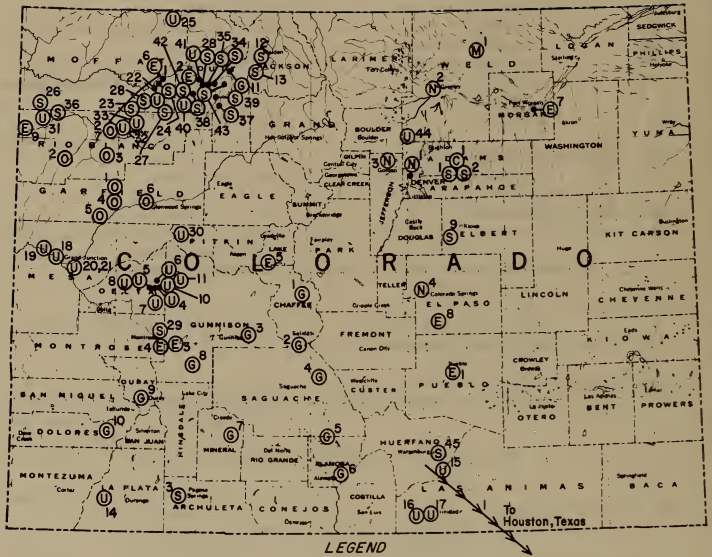

FIGURE 4. - Future fuels-related projects in Colorado.

TABLE 21. - Future coal mines in Colorado

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	Watkins Lignite near Watkins, Adams County (T 3 S, R 65 W)	Cameron Engineers, Denver, CO	Strip	10.0-1983	Mine-mouth Gasification		25	180 maximum	0	e660	High uncertainty Start-up in 1980. Engineering studies in progress.	1,2,3 4
S2	Unnamed near Watkins, Adams County	Kerr-McGee, Oklahoma City, OK	Strip		Gasification						High uncertainty.	2,4
S3	Mel Martinez Mine, 10 miles SW of Pagosa Springs, Archuleta County (T 34 N, R 3+4 W)	Milton Fuller, Durango, CO	Strip	0.25-1976						e10	80 acre fee lease. Zoning request approved by county in May 1975. Coal would be trucked to South Fork to be shipped on DRGW line.	1,4
U4	Farmers Mine near Paonia, Delta County (T 13 S, R 91 W)	Pittsburg & Midway Coal Company, Denver, CO	Underground	1.0-uncertain						e345	Dependent upon obtaining additional federal coal acreage.	2,4
U5	King Mine 6 miles E of Paonia, Delta County (T 13 S, R 91 W)	Adolph Coors Co., Golden, CO	Underground	0.5-1980	Coors industries	Moist. 2.9-6.1% Ash-4.3-8.1% Sulfur-0.4-1.2% Btu/lb-12,700-13,500	11-23 (lower)	2,000 maximum		e175	Start-up in 1980. Reopening of old mine.	1,2,4

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U6	Converse Mine 1 mile N of Paonia, Delta County	Colorado Westmoreland (a subsidiary of Westmoreland Coal), Colorado Springs, CO	Underground	1.5-1980 (potential)	Midwestern utilities	Sulfur-0.4-0.6% Btu/lb-12,000	4-5 (upper) 16 (B) 7-9 (other)		10	85	Purchased by Westmoreland from Colorado Consolidated Coal Co. in early 1976. Reserves are reported at only 4 million tons but Westmoreland has applied for coal leases on adjacent federal lands. Leases with the sale include the Converse Mine and the Leroux Creek property. Development investment estimated at $5-6 million. Start-up in 1977.	2,4,5,6
U7	Old Blue Ribbon Mine 4 miles E of Paonia, Delta County	Sunflower Energy Corp., Denver, CO	Underground	0.1-1976	Local	Moist-6.0-6.9% Ash-3.2-5.4% Sulfur-0.4-0.6% Btu/lb-12,700-13,100	6	250-800	10	10	Reopening of old mine.	2,4
U8	Coalby No.2 Cedaredge, Delta, County	Coalby Mining Company, Cedaredge, CO	Underground	(expansion)							Operating. Details are unknown for expansion.	2

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S9	Station Creek Project 5 miles SE of Kiowa, Elbert County	Cameron Engineers, Denver, CO	Strip	1.0-1980	Industrial fuel		8-10	140	0	e66	Exploratory drilling completed. Seeking partners to help with development.	2,4
U10	Unnamed 1 mile E of Somerset, Gunnison County	Atlantic Richfield, Denver, CO	Underground	2.0-1980	Electric utilities in western Colorado or eastern Utah		25 maximum	1,600 maximum	10	600	Exploratory drilling in progress. Start-up in 1980.	2,3,4
U11	Hawks Nest East 2 miles E of Somerset, Gunnison County	Western Slope Carbon, Inc., Somerset, CO	Underground	0.6-1977 (expansion)	CF&I Steel, Pueblo, CO, Ford Motor Company, Detroit, MI		9	1,600	90	150	Expansion of existing mine. Company purchased by Northwest Pipeline Co. in December 1974. 1974 production estimated at 0.25 million tons.	2,3,4
S12	Grizzly Creek 17 miles SW of Walden, Jackson County	Sunflower Energy Corp., Denver, CO and Zapata Fuels	Strip	See remarks	Electric utilities	Moist.-20% Ash-10% Sulfur-0.6-0.7% Btu/lb-9,000	22-30 (Riach)	10-200		40	Mine is currently idle. New environmental and geologic studies underway. Has immediate expansion capacity to 0.5 MMTPY with possible expansion to 2.0 MMTPY. Zapata Fuels is new partner.	2,4
S13	Unnamed Coalmont area, 20 miles SW of Walden, Jackson County	Consolidation Coal Company, Denver, CO	Strip	1.0-1979	Seeking market	Btu/lb-8,500	40	150 (maximum)		e66	Proposed new mine. Possibility of mine-mouth powerplant.	3,4

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U14	Unnamed near Hesperus, LaPlata County	Energy Resources, Ltd., Denver, CO		See remarks							Company acquired 2,000 acres of coal leases from J. Kikel. Exploration and drilling are planned with possible future development. Reserves are reported at 100 million tons.	1
U15	Unnamed near Pryor, Las Animas and Huerfano Counties	Tipperary Oil & Gas Corp., Midland, TX	Underground	0.5-1978	Siderite iron ore reduction plant in Western Kansas						Application for federal coal leases made to BLM in April 1975.	1,2,4
U16	Lorencito near Weston, Las Animas County	Freeport Coal Co., New York, NY	Underground	1.0-1979	Eastern steel mills	Btu/lb-11,400-13,900	9 maximum	900	0	500	State is examining impact on local area. Start-up date is indefinite.	1,2,3,4
U17	Maxwell near Weston, Las Animas County	CF&I Steel Corporation, Pueblo, CO	Underground	0.6-1978	CF&I Steel, Pueblo, CO	coking coal		410		100	Near CF&I's Allen mine. Shaft will be finished in 1976. Estimated cost of mine is $10 million. Potential capacity of 5,000 tons per day. Start-up in 1977.	1,2,4,7
U18	McGinley Mine near Grand Junction, Mesa County	Eagle Head Coal Co., Grand Junction, CO	Underground	0.25-1976						[6]85	Start-up in 1976.	2

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U19	McKinley No. 1 near Fruita, Mesa County	Energy & Export Co., Ltd., Fruita, CO	Underground	0.1-1977						[e]35	Proposed new mine. Start-up in 1977.	2
U20	CMC Mine 1 mile S of Cameo, Mesa County (T 10 S, R 98 W)	Cambridge Mining Corp., Palisade, CO	Underground	0.5-1977 (expansion)	Cameo power-plant and export		7			[e]175	Slope mine. Coal washing equipment installed. Estimated 1975 production of 100 thousand tons.	2,4
U21	CMC No. 1 S of Cameo, Mesa County	Cambridge Mining Corp., Palisade, CO	Underground	1.4-1977						[e]480	Start-up in 1976. Proposed new mine.	2
U22	Wise Hill Nos. 5,6,7 6 miles S of Craig, Moffat County (T 6 N, R 91 W)	Empire Energy Corporation, Craig, CO	Underground and strip	2.0-1980 (expansion)	CF&I Steel and out-of-state markets	Moist.-16.0% Ash-5.8% Sulfur-0.5% Btu/lb-10,600	12-14	150 maximum	72	150	1975 production for Mine No. 5 estimated at 0.2 million tons. Mine Nos. 6 & 7 will start up in 1976 and 1977 respectively.	1,3,4, 8
S23	Colowyo Mine 25 miles S of Craig, Moffat County	W. R. Grace, Denver, CO and Hanna Mining Co., Cleveland, Ohio	Strip	3.0-1979	Out-of-state electric utilities	Moist.-8.5-23.3% Ash-2.7-9.4% Sulfur-0.2-1.0% Btu/lb-10,500	52 (8 seams)	150 maximum		244	Federal coal. Start-up in 1976. Spur line to be constructed from mine to Craig, CO.	3,4,8, 9

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S24	Unnamed 4 miles S of Craig, Moffat County	Utah International, Inc., San Francisco, CA	Strip	2.9-1980	Craig mine-mouth powerplant		11	40-120	10	165	Construction on powerplant in progress. Pre-strip blasting to begin in May 1976 with production to begin in 1977.	3,4,8
U25	Unnamed Savery area, Moffat County	Kemmerer Coal Co., Kemmerer, WY	Underground	unknown			6				Proposed mine. In planning stage. Dependent upon BLM lease approval. Plans unknown.	2,4
S26	Unnamed 4 miles W of Rangely, Moffat County	Blue Mountain Coal Company	Strip and Underground	unknown	Export						Proposed mine. Completed exploration in late 1974. Old mining operation closed. Plans unknown.	2,4
S27	Wilson Creek Mine 25 miles S of Craig, Moffat County	Utah International, Inc., San Francisco CA	Strip	unknown	Export and Craig powerplant						Prospecting completed. Have existing leases. Plans unknown.	2,4
S28	Unnamed (2 mines) 20 miles S of Craig, Moffat County and 14 miles E of Steamboat Springs, Routt County	Paul S. Coupey	Strip	1.0-1980	unknown					75	Mine operators unknown. Proposed mines. Plans unknown.	8

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S29	Unnamed near Cimarron, Montrose County	H.W. Siddle, Littleton, CO, and Grand Construction	Strip	unknown		Moist.-18.5-19.0% Ash-6.3-6.4% Surfur-0.49-0.58% Btu/lb-9,240-9,250	18-27 (upper) 8-15 (lower)				Proposed mine. Exploratory drilling completed. Development plans unknown. Options on land have lapsed.	2,4
U30	Thompson Creek Nos. 1 & 3 13 miles SW of Carbondale, Pitkin County	Anschutz Coal Co., Denver, CO	Underground	1.0-1979 (expansion)	Steel mills	Moist.-2.3-3.6% Ash-7.6-14.1% Sulfur-0.6-1.2% Btu/lb-12,800-13,900			12	320	Plans to reopen old mine closed in 1966. Surface development in progress. 1975 production estimated at 23,000 tons. EPA permit issued to discharge water. Experiencing legal delays with county governments in obtaining permits to mine.	2,3,4, 10,11
U31	Gordon Mine 10 miles E of Rangely, Rio Blanco County	Moon Lake Electric Company, Roosevelt, UT	Underground	1.5-1980 2.3-1985 3.7-1990	Mine-mouth powerplant for oil shale development		7	300-1,000	0	700	Adjacent to old Staley Mine. Market for potential 1,000 MW power complex in late 1980's.	1,2,4,8
U32	Rienau No. 2 6 miles S of Meeker, Rio Blanco County	American Fuels Inc., Meeker, CO	Underground	0.3-1980	Local markets	Moist.-12.6-14.7% Ash-4.2-4.8% Sulfur-0.5-0.7% Btu/lb-11,300-11,500			12	25	Negligible production in 1975. Prospective buyers are presently examining property.	2,4,8

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U33	Unnamed 9 miles N of Meeker, Rio Blanco County	Consolidation Coal Company, Denver, CO	Underground and Strip	See remarks							Exploratory drilling began in 1974. Plans are unknown. Employment and productions estimates included in Merchant Petroleum production below. Start-up planned for 1981.	2,4,8
S34	Unnamed 10 miles W of Steamboat Springs, Routt County	Merchants Petroleum Company	Strip	4.4-1980 (includes Consolidation Coal Co., and T.C. Woodward)						570	Employment and production estimate includes Consolidation Coal Company mine above and Woodward mine below. Company leased 5,300 acres in Routt County with 100-275 million tons of reserves. Start-up in 1980.	8,12
S35	Unnamed 12 miles W of Steamboat Springs, Routt County	Thomas C. Woodward, Casper, Wy	Strip	See remarks							Operator of mine unknown. Employment and production estimates included in Merchants Petroleum estimate above. Start-up in 1980.	8
S36	Unnamed 8 miles NW of Rangely, Rio Blanco County	Midland Coal Company	Strip	0.2-1980 0.3-1985					0	46	Start-up in 1981. Markets and plans are unknown.	8

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S37	Edna Mine Oak Creek, Routt County	Pittsburgh & Midway Co., Kansas City, MO	Strip	1.1-1980 1.2-1985 (expansion)					75	75	1975 production estimated at 1.0 million tons.	8
S38	Seneca 2-W 10 miles S of Hayden, Routt County	Peabody Coal Company, St. Louis, MO	Strip	0.8-1976	Hayden No. 2 powerplant		9 (Wadge)	0-30		44		1,2,3,8
S39	Energy Nos. 1 & 2 22 miles SW of Steamboat Springs, Routt County	Energy Fuels Corp., Steamboat Springs, CO	Strip and Under-ground	4.5-1980 (expansion)	Public Service of Colorado powerplants		4.5 (upper) 9.0 (lower Wadge)	2,000 maximum	175	593	1975 production estimated at 2.0 million tons.	2,4,8
U40	Sun Mine 3 miles N of Willow Creek, Routt County	Ruby Construction, Louisville, KY	Under-ground	0.3-1977	In-state markets	Moist.-11.2-11.5% Ash-4.2-9.5% Sulfur-0.4-0.5% Btu/lb-10,900 11,600	8-9			65	Start-up in 1976. Awaiting NW Colorado EIS.	1,2,4,8
U41	Unnamed 20 miles W of Steamboat Springs, Routt County	Coal Fuels, Rollinsville, CO	Under-ground	2.0-1980					0	290	Start-up in 1977. Plans and markets unknown.	1,8
S42	Unnamed 3 miles N of Pagoda, Routt County	American Electric Power System	Strip	1.0-1980 1.4-1985	AEP powerplants, eastern United States				0	150	Start-up in 1981. Operation and plans are unknown.	8

TABLE 21. - Future coal mines in Colorado--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S43	Unnamed SW of Steamboat Springs, Routt County	Morgan Coal Company	Strip	unknown							Proposed mine. Plans are unknown.	2,4
U44	Lincoln Mine near Erie, Weld County	Adolph Coors Company, Golden, CO	Underground	0.2-1976	Coors industries	Moist.-23.5-25% Ash-6.5-8.5% Sulfur-0.4-0.5% Btu/lb-9,100-9,500	6-12	425 maximum		e70	Union Pacific owns surface rights. Coors owns coal. Start-up depends upon natural gas availability.	2,4
U45	Unnamed N of Walsenburg, Huerfano County	Groves/Calder, Walsenburg, CO	Strip		local						Proposed mine. Plans are unknown.	2,3

e Estimated, see appendix for explanation.

TABLE 22. - Future electric powerplants in Colorado

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Comanche No. 2 Pueblo, Pueblo County	Public Service Company of Colorado, Denver, CO	Coal-e1.1		350		Dec. 1975		e350	e45	Arkansas River is water source. AMAX's Belle Ayr mine in Campbell County, Wyoming is coal source.	13,14, 15,24
E2	Hayden No. 2 Hayden, Routt County	Salt River Project and Colorado Ute-Electric Assocoation, Montrose, CO	Coal-0.8		250	2	July 1976		e250	e31	Additions to existing 181 MW unit. Water requirements for Unit 2 estimated at 4,000 acre-feet per year.	8,13,14, 24

TABLE 22. - Future electric powerplants in Colorado--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E3	Morrow Point No. 2 SW Gunnison County	U.S. Bureau of Reclamation, Colorado River Storage Project	Hydropower		69		Apr. 1977		e70	e8		1,13, 14,15
E4	Crystal No. 1 Cimmaron, Montrose County	U.S. Bureau of Reclamation, Colorado River Storage Project	Hydropower		32		Oct. 1977		e32	e4		13,14, 15,24
E5	Mt. Elbert Nos. 1 & 2 Twin Lakes, Lake County	U.S. Bureau of Reclamation, WY-NE-CO Interconnected System	Hydropower (pump storage)	1 2 Total	100 100 200	1 2	Nov. 1977 Feb. 1980	1 1	e100 e100	e12 e12	Unit No. 2 construction contract awarded to Mitsui & Company of San Francisco.	13,14, 15,24
E6	Craig (Yampa) Nos. 1-4 S of Craig, Moffat County	Colorado-Ute Electric Association, Montrose, CO	Coal-e4.9 (total, all units)	1 2 3 4 Total	380 380 380 380 1,520	1 2 3 4	Apr. 1978 Apr. 1979 July 1981 July 1982	Total	e1,520	e190	Utah International will supply coal for the mine-mouth complex.	1,8,13, 14,15,24
--	Future Nos. 1 & 2 Southeastern Colorado	Public Service Company of Colorado, Denver, CO	Coal-e3.2 (total, both units)	1 2 Total	500 500 1,000	1 2	Apr. 1983 Apr. 1985	Total	e1,000	e130	Site unknown. Units are reported to FPC as projected additions to company capacity.	13,24
E7	Pawnee Nos. 1 & 2 Brush, Morgan County	Public Service Company of Colorado, Denver, CO	Coal-e3.2 (total, both units)	1 2 Total	500 500 1,000	1 2	Apr. 1979 Apr. 1981	Total	e1,000	e130	Construction delayed due to legal conflict with State over conditional permit requiring construction to stop if a potential air quality violation is suspected. Possible coal source is the AMAX Belle Ayr mine near Gillette, WY.	13,15, 16

TABLE 22. - Future electric powerplants in Colorado--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E8	Nixon Nos. 1-3 Probable location for Unit No. 1 is near Fountain, El Paso County	City of Colorado Springs Electric Department, Colorado Springs, CO	Coal-e2.3 (total, all units)	1 2 3 Total	200 200 350 750	1 2 3	Oct. 1979 Oct. 1985 Oct. 1983	1 2 3	e200 e200 e350	e25 e25 e44		13,15,24
E9	Hatch Flats E of Rangely, Rio Blanco County	Moon Lake Electric Company, Roosevelt, Ut	Coal-e1.0		300		late 1980's		e300	e38	Potential for 1,000 MW at site. Coal would be supplied by company mine near plant site.	1,4,14

e Estimated, see appendix for explanation.

TABLE 23. - Future coal conversion plants in Colorado

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak Employment Construction	Peak Employment Operation	Remarks	Data source
C1	Watkins Lignite near Watkins, Adams County	Mintech Corp., Denver, CO	Gasification	1983	250 million cubic feet per day	e1,125	e600	High uncertainty. Engineering studies in progress. Initially planned for 1980 but indications are that start-up date will be around 1983.	2,3,4, 14

e Estimated, see appendix for explanation.

TABLE 24. - Future waste-to-fuel conversion plants in Colorado

Map ref. no.	Plant name and location	Operating company	Type and feedstock	Initial operating date	Planned capacity	Peak employment		Remarks	Data source
						Construction	Operation		
N1	Unnamed Denver, Denver County	Energy Conversion Systems, Inc.	Solid waste to gas	1977	9.25 MW			Will consume approximately 450 tons of solid waste per day. Will be used for electrical generation. Construction delay due to lack of funding for the $11 million plant.	14
N2	Monfort Feedlot Greeley, Weld County	Bio-Gas, Inc. Golden, CO	Bio-conversion to methane	unknown	3 million cubic feet per day			Proposed project presently suspended for lack of funds. Conversion of feedlot waste to methane.	14
N3	Unnamed near TOSCO Laboratory, N of Golden, Jefferson County	The Oil Shale Corporation (TOSCO) Golden, CO	Rubber tires to oil and carbon black	mid-1976	15 tons per day (rubber tires)			Construction of pilot plant is in progress and testing is expected to begin in mid-1976. If successful, full scale commercial plants could be built and licensed by TOSCO, each with a 300 ton per day capacity. Each commercial plant could recover 14 million gallons of oil and 63 million pounds of carbon black from 11 million scrap tires annually. Goodyear is co-funding the project.	14,17
N4	Unnamed Colorado Springs, El Paso County	Energid Corp., Denver, CO	Solid waste to fuel oil	Sep. 1976				Will utilize hydrogenation process to produce heavy fuel oil from sewage sludge. Each ton of sewage will produce about 55 gallons of oil.	14

TABLE 25. - Future oil shale projects in Colorado

Map ref. no.	Project name and location	Operating company	Mine type	Planned capacity thousand bbl per day	Initial operating date	Peak employment		Remarks	Data source
						Construction	Operation		
01	Parachute Creek (private land) 15 miles N of Grand Valley, Garfield County (SE Piceance Basin)	Colony Development, Denver, CO	Underground	50	indefinite			Development suspended in October 1974 due to inflation and future crude oil price uncertainties. Outlook is still optimistic. Colony is a consortium of Atlantic Richfield, Ashland Oil, Shell Oil, and TOSCO.	4,14,18
02	Rio Blanco Oil Shale Project (Federal Tract C-a) 20 miles SE of Rangely, Rio Blanco County (Central Piceance Basin)	Gulf Oil Corp., and Standard of Indiana, Denver, CO	Open pit	100	indefinite			Initial plans called for a 1980 production date. Predevelopment studies underway with development plans to be completed in mid-1976.	4,14,18
03	C-b Project (Federal Tract C-b) 15 miles NW of Rio Blanco, Rio Blanco County (SW Piceance Basin)	Shell Oil Company and Ashland Oil Co., Denver, CO	Underground	50	indefinite			ARCO and TOSCO withdrew in December 1975 citing reasons as lack of capital availability, an unstable national energy policy, and lack of loan guarantees and price supports to the synthetic fuels industry. Shell submitted a 4-phase development plan in February 1976. Environmental baseline studies will be completed in November 1976. A four-year development phase could begin in 1977 although unfavorable economic and regulatory conditions may alter these plans. Companies have recently requested an 18-month extension of lease payments to Interior.	4,14,18

TABLE 25. - Future oil shale projects in Colorado--Continued

Map ref. no.	Project name and location	Operating company	Mine type	Planned capacity thousand bbl per day	Initial operating date	Peak employment		Remarks	Data source
						Construction	Operation		
04	Union Oil Project (private land) 10 miles N of Grand Valley, Garfield County (SE Piceance Basin)	Union Oil Company, Los Angeles, CA	Underground	50	indefinite			Studies for mine and retort completed. Project continuation is heavily dependent on federal funding.	4,14,18
05	Roan Creek Project 6 miles SW of Grand Valley, Garfield County (SW Piceance Basin)	Occidental Oil Shale, Inc., Grand Junction, CO	modified in situ	30	indefinite			A 500 barrel per day underground retort was successfully ignited in December 1975. Have large scale in-situ pilot retort in operation. March 1976 production was 300 barrels per day while April production was 575 barrels per day of shale oil. It is estimated that 35,000 barrels will have been produced by June 1, 1976. Company plans to ignite a second large scale retort in July 1976.	1,4,14, 18
06	Paraho Demonstration Project Rifle, CO (U.S. Naval Oil Shale Reserve No. 1)	Paraho Oil Shale Demonstration Inc., Grand Junction, CO	Underground	7 (one retort)	1976			Participants include A.G. McKee, ARCO, Carter Oil, Chevron, Cleveland Cliffs, Gulf, Kerr-McGee, Marathon, Mobil, Phillips, Shell, SOHIO, Southern California Edison, Amoco, Sun, Texaco, and Webb Resources. ERDA and the Department of Defense have agreed to extend the life of the project with a $12 million to $15 million contract under which the firm will produce, refine, and store 100,000 barrels of shale oil over the next 2 years. The project would involve production of shale oil from which various refineries would turn out products for military use.	4,14,18,

TABLE 25. - Future oil shale projects in Colorado--Continued

Map ref. no.	Project name and location	Operating company	Mine type	Planned capacity thousand bbl per day	Initial operating date	Peak employment Construction	Peak employment Operation	Remarks	Data source
07	Superior Oil Project (private land) 20 miles NW of Meeker, Rio Blanco County (N Central Piceance Basin)	Superior Oil Co., Houston, TX	Underground	68.5	indefinite				4,14
--	Other Garfield and Rio Blanco Counties	See remarks						Mobil Oil, Texaco, Chevron, Getty and Cities Service Company all hold oil shale lands in the area although no projects have been announced to date.	4,14

TABLE 26. - Potential geothermal facilities in Colorado

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1-G11			Applications for geothermal leases have been made in the following areas: - W of Nathrop, Chaffee County (Map Location G1) - SW of Salida, Chaffee County (Map Location G2) - Near Waunita Hot Springs, Gunnison County (Map Location G3) - Near Mineral Hot Springs, Saguache County (Map Location G4) - Near Hooper, Alamosa and Saguache Counties (Map Location G5) - E of Alamosa, Alamosa County (Map Location G6) - Near Wagon Wheel Gap, Mineral County (Map Location G7) - W of Powderhorn, Gunnison County (Map Location G8) - Ouray Area, Ouray County (Map Location G9) - Near Dunton, Dolores County (Map Location G10) - N of Steamboat Springs, Routt County (Map Location G11) No significant prospects have been reported to date. Many of these application are located in USGS Known Geothermal Resource Areas.	15

TABLE 27. - Future coal slurry pipelines originating in Colorado

Map ref. no.	Operating company	Proposed route: Origin	Proposed route: Destination	Initial operating date	Capacity, million tons per year	Length, miles	Pipe diameter, inches	Water source and requirements, acre-feet per year	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Houston Natural Gas Company, Houston, TX and DRGW Railroad, Denver, CO	Walsenburg, Las Animas County	Corpus Christi, Lubbock, and Houston, TX	early 1980's	10	820	24	21,000 barrels per day from deep wells and small storage projects.		150 (at Walsenburg)	Dependent upon legislation for right of emminent domain. Pipeline would cross railroads at 26 locations in Texas alone. Construction planned to begin in 1978. 550 hopper cars will be required to deliver coal from various Colorado mines to the Walsenburg preparation plant. A second source of coal, near Farmington, NM, would be moved by a slurry line to join the main line at Walsenburg.	4,14,19
--	Cambridge Mining Corp., Palisade, CO	CMC Mine S of Cameo, CO	Cameo power-plant Cameo, CO	unknown	3						Proposed pneumatic pipeline. Mine began production in 1975. Pipeline plans unknown.	4,14,23

TABLE 28. - Future railroads (related to fuels development) in Colorado

Map ref. no.	Operating company	Proposed route: Origin	Proposed route: Destination	Length, miles	Type	Initial operating date	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Denver & Rio Grande Western Railroad	Craig, Moffat County	Axial Basin (near Colowyo Mine) SE Moffat County	25	spur	1976-77			Pending completion of NW Colorado EIS. Would serve proposed mine in the area, connecting with DRGW main line near Craig.	8,14
2	Denver & Rio Grande Western Railroad	Axial Basin, Moffat County	Superior Oil Shale Project 20 miles NW of Meeker, Rio Blanco County	25	spur				Proposed extension of above line. High uncertainty.	14

TABLE 29. - Future uranium mines in Colorado

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity and year	Employment: Present	Employment: Maximum	Remarks	Data source
M1	Weld County	Wyoming Minerals Corp., Power Resources, and Aquarius Resources Corporation					The 3 companies have signed a agreement for a six-phase joint-venture uranium exploration and development program on about 140,000 acres of prospective uranium lands in Weld County.	20,21

List of Data Sources for Colorado

1. Murray, D. Keith. Colorado Geological Survey, Denver, Colo.

2. U.S. Mining Enforcement and Safety Administration, District 9, Denver, Colo. Projected Mine Production Activity, October 17, 1975.

3. Coal Age. New Coal Mine Development and Expansion Survey, February 1976.

4. Denver Federal Executive Board, Subcommittee to Expedite Energy Development. A Listing of Proposed, Planned or Under Construction Energy Facilities in Federal Region VIII.

5. Mining Record. February 18, 1976.

6. Coal News. January 9, 1976.

7. Denver Post. March 2, 1976.

8. U.S. Bureau of Land Management. Northwest Colorado Environmental Impact Statement (draft). Preliminary Tables received by Bureau of Mines Colorado State Liaison Office.

9. Rocky Mountain News. December 30, 1975.

10. Grand Junction Daily Sentinel. September 14, 1975.

11. Glenwood Springs Post. September 9, 1975.

12. Rocky Mountain News. December 24, 1975.

13. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

14. Federal Energy Administration, Region VIII Office, Denver, Colorado.

15. Colorado Geological Survey. Energy Resource Development Map of of Colorado, Map Series 6.

16. Rocky Mountain News. February 12, 1976.

17. Denver Post. March 14, 1976.

18. Engineering and Mining Journal. U.S. Oil Shale Development Bogs Down, March 1976.

19. Bechtel Corporation. Terminal Facilities for Western Coal Slurry Pipelines. Prepared for presentation at the 1976 AIME Meeting, Las Vegas, Nev., February 22-26, 1976.

20. Mining Record. December 10, 1975.

21. Engineering and Mining Journal. 107th Annual Review and Outlook, March 1976.

22. Rocky Mountain News. May 18, 1976.

23. Walsenburg Huerfano World. April 22, 1976.

24. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

Idaho

Data on the Idaho projects listed below are presented in Tables 30 and 31. The map reference numbers correspond to the accompanying Idaho map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Brownlee	Idaho Power Co.
E2	American Falls	Do.
E3	Pioneer Nos. 1 and 2	Do.
Potential geothermal facilities:		
G1	Raft River Valley	U.S. ERDA, Aerojet Nuclear Co.
G2	Boise Front	U.S. ERDA, Boise State University

FIGURE 5. - Future fuels-related projects in Idaho.

TABLE 30. Future electric powerplants in Idaho

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Brownlee Plant Snake River, Washington County	Idaho Power Co., Boise, ID	Hydropower		225		Apr. 1979		150	0	Additional unit to hydro plant. FPC permit issued.	2
E2	American Falls Plant Snake River, Power County	Idaho Power Co., Boise, ID	Hydropower		93		Apr. 1978		680	10	Rebuilding of existing hydro plant facilities. FPC permit issued. Idaho courts reviewing financing.	2,5
E3	Pioneer Nos. 1 & 2 Orchard, Ada County	Idaho Power Co., Boise, ID	Coal-3.2 (total, both units)	1 2 Total	500 500 1,000	1 2	Apr. 1981 Apr. 1983	1 2	500 500	75 75	Idaho P.U.C. has yet to approve. No permits have been issued.	2

TABLE 31. - Potential geothermal facilities in Idaho

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	Raft River Valley, near Bridge, Cassia County	ERDA research grant to Aerojet Nuclear Co., Idaho Falls, ID	Project plans call for the design and development of a 10 kW pilot plant utilizing approximately 300°F hot water as a source for generating electricity. USGS has completed 2 wells and the third is in progress. It is expected that 7 wells will be needed to obtain the required flow of water, based on flow and temperature at existing wells.	3
G2	Boise Front, Boise, ID	ERDA research grant to Boise State University, Boise ID	For the past 70 years, warm springs in the Boise Front have supplied space heating for 200 homes and the old State Penitentiary in Boise. Under the research grant, University geologists are supervising a drilling program in an attempt to develop enough hot water (about 170°F) to supply space heating for the University and State buildings in the capitol complex. Results, although inconclusive, are encouraging, and the project is expected to continue.	3,4

List of Data Sources for Idaho

1. Pacific Northwest River Basins Commission. Review of Power Planning in the Pacific Northwest (draft), Calendar Year 1975.

2. Idaho Public Utilities Commission, Boise, Idaho.

3. U.S. Energy Research and Development Administration, Idaho Falls, Idaho.

4. Boise State University, Boise, Idaho.

5. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

Iowa

Data on the Iowa projects listed below are presented in Tables 32 and 33. The map reference numbers correspond to the accompanying Iowa map.

Map ref. no.	Project name	Company or agency
Coal mines:		
U1	Big Ben No. 1	Big Ben Coal Co.
Electric powerplants:		
E1	George Neal Nos. 3 and 4	Iowa Public Service Co.
E2	Waterloo No. 2	Do.
E3	Lansing No. 4	Interstate Power Co.
-	Unsited, 4 units	Iowa Electric Light & Power Co.
E4	Burlington Nos. 1 and 2	Iowa Southern Utilities Co.
E5	Central Heat No. 3	Iowa State University of Science & Technology
E6	Muscatine Nos. GT 1-9	City of Muscatine
-	Unsited	Eastern Iowa Light & Power Coop.
E7	Council Bluffs No. 3	Iowa Power & Light Co.
-	Unsited	Iowa Electric Light & Power Co.
E8	Ottumwa No. 1	Iowa Southern Utilities Co.
-	Unsited	Iowa Electric Light & Power Co.

FIGURE 6. - Future fuels-related projects in Iowa.

TABLE 32. - Future coal mines in Iowa

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U1	Big Ben No. 1 near Williamson, Lucas County	Big Ben Coal Co., Williamson, IA	Underground	0.2-1977 (expansion)					e70	e70	Present capacity estimated at 0.12 million tons per year.	1

e Estimated, see appendix for explanation.

TABLE 33. - Future electric powerplants in Iowa

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	George Neal Nos. 3 & 4 Salix, Woodbury County	Iowa Public Service Company, Sioux City, IA	Coal-e3.5 (total, both units)	3 4 Total	520 575 1,095	3 4	Jan. 1976 Jan. 1979	3 4	e520 e575	e65 e72	Coal will be supplied by Energy Development Company Mines near Hanna, WY.	2
E2	Waterloo No. 2 Waterloo, Black Hawk County	Iowa Public Service Company, Sioux City, IA	Gas or Oil		65		May 1977		e65	e8		2
E3	Lansing No. 4 Lansing, Allamakee County	Interstate Power Company, Dubuque, IA	Gas or Oil		260		May 1977		e260	e33		2
--	Unsited Nos. A-D	Iowa Electric Light & Power Company, Cedar Rapids, IA	Gas or Oil	A B C D Total	50 50 50 50 200	A B C D	May 1977 May 1977 June 1978 June 1978	Total	e200	e25	Site and plans are unknown. Units reported to FPC as projected additions to company capacity. Units will not necessarily be built at same location.	2
E4	Burlington Nos. 1,2 Burlington, Des Moines County	Iowa Southern Utilities Co., Centerville, IA	Gas or Oil	1 2 Total	50 50 100	1 2	May 1977 May 1978	Total	e100	e13		2

TABLE 33. - Future electric powerplants in Iowa--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E5	Central Heat No. 3 Ames, Story County	Iowa State University of Science & Technology, Ames, IA	Coal-e0.035		11		May 1977		e11	e1		2
E6	Muscatine No. GT1 and No. 9, Muscatine, Muscatine County	City of Muscatine, Muscatine, IA	No. 1-Gas No. 9-Coal-e0.5	1 9 Total	25 150 175	1 9	May 1978 May 1982	1 9	e25 e150	e3 e19		2
--	Unsited	Eastern Iowa Light & Power Cooperative, Wilton Junction, IA	Gas or oil		25		June 1978		e25	e3		2
E7	Council Bluffs No. 3 Council Bluffs, Pottawatomie County	Iowa Power & Light Company, Des Moines, IA	Coal-e2.0		650		Jan. 1979		e650	e81		2
--	Unsited	Iowa Electric Light & Power Company, Cedar Rapids, IA	Gas or oil		50		May 1979		e50	e6		2
E8	Ottumwa No. 1 Ottumwa, Wapello County	Iowa Southern Utilities Company, Centerville, IA	Coal-e2.2		675		Jan. 1981		e675	e85		2
--	Unsited	Iowa Electric Light & Power Company, Cedar Rapids, IA	Nuclear		1,100		May 1984		e1,100	e138		2

e Estimated, see appendix for explanation.

List of Data Sources for Iowa

1. U.S. Mining Enforcement and Safety Administration, District 9, Denver, Colo. Projected Mine Production Activity, October 17, 1975.

2. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

Kansas

Data on the Kansas projects listed below are presented in Tables 34 and 35. The map reference numbers correspond to the accompanying Kansas map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Bill's Coal Company	Bill's Coal Co.
Electric powerplants:		
E 1	Garden City Nos. GT2 and GT3.	Sunflower Electric Coop.
E 2	Sunflower No. GT2	Do.
E 3	McPherson No. 2	City of McPherson
E 4	LaCygne No. 2	Kansas City Power & Light Co.
E 5	Ottawa Nos. GT2 and GT3	Ottawa Power & Light Department
E 6	Quindaro Addition	Kansas City Board of Public Utilities
E 7	Plant Nos. 1 and 2	Empire District Electric Co.
E 8	Nearman Creek Nos. 1 and 2	Kansas City Board of Public Utilities
E 9	Jeffrey Energy Center Nos. 1-4.	Kansas Power & Light Co.
-	Unsited, 2 units	Central Kansas Power, Inc.
E10	Mulvane No. 5	City of Mulvane
E11	Wolf Creek	Kansas City Power & Light Co.
E12	Sunflower No. 3	Sunflower Electric Coop.

FIGURE 7. - Future fuels-related projects in Kansas.

TABLE 34. - Future coal mines in Kansas

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	Bill's Coal Company Osage County (T 17 S, R 14-15 E)	Bill's Coal Company Tulsa, OK	Strip	0.25-1978	Powerplant	Moisture-10% Ash-10% Sulfur-7% Btu/lb-11,100	1.2-1.5	20-35	0	60	Firm plans to open mine when the market for the coal is developed.	1

TABLE 35. - Future electric powerplants in Kansas

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Garden City GT Nos. 2 & 3 Garden City, Finney County	Sunflower Electric Cooperative, Garden City, KS	Gas/oil	2	55	2	June 1976	2	e55	e7		2,3
				3	55	3	June 1978	3	e55	e7		
				Total	110							
E2	Sunflower GT No. 2 Hays, Ellis County	Sunflower Electric Cooperative, Garden City, KS	Gas/oil		55		1976		25	0	Operated by personnel already operating Unit 1.	1,2
E3	McPherson Plant No. 2 McPherson, McPherson County	City of McPherson, McPherson, KS	Gas/oil		65		1976		65	8	New plant.	1,2
E4	LaCygne No. 2 6 miles E of LaCygne, Linn County	Kansas City Power & Light Company, Kansas City, MO and Kansas Gas & Electric Co., Wichita, KS	Coal-1.4		630		Nov. 1977		1,300	86	Second unit of complex.	2

TABLE 35. - Future electric power plants in Kansas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E5	Ottawa GT Nos. 2,3 Ottawa, Franklin County	Ottawa Water & Light Dept., Ottawa, KS	Gas/oil	2 3 Total	9 9 18	2 3	July 1977 Dec. 1980	Total	[e]20	[e]3		3
E6	Quindaro Addition Kansas City, KS	Kansas City Board of Public Utilities, Kansas City, KS	Oil		30		1977		30	0	No additional employees needed to operate this peaking addition to Quindaro complex.	4
E7	Plant Nos. 1 & 2 Riverton, Cherokee County	Empire District Electric Company, Joplin, MO	Oil	1 2 Total	91 91 182	1 2	June 1978 June 1980	1 2	[e]90 e90	[e]23		3
E8	Nearman Creek Nos. 1 & 2 Kansas City, KS	Kansas City Board of Public Util., Kansas City, KS	Coal-[e]1.7 (total, both units)	1 2 Total	246 320 566	1 2	June 1978 June 1982	1 2	350 [e]320	38 [e]40	Plans also call for 1,000 ft. railroad spur line.	2,3
E9	Jeffrey Energy Center, Nos. 1-4 Pottowatomie County (T 9 S, R 12 E)	Kansas Power & Light Company, Topeka, KS	Coal-8.4 (total, all units)	1 2 3 4 Total	720 720 720 720 2,880	1 2 3 4	June 1978 June 1980 June 1982 June 1984	Total	[e]1,278	348	New complex. Plans also call for 5 mile railroad spur line.	2,3
--	Unsited Nos. 1,2 Central Kansas	Central Kansas Power Company, Inc., Colby, KS	Unknown	1 2 Total	23 23 46	1 2	June 1979 June 1982	1 2	[e]23 [e]23	[e]3 [e]3	Plans and site are not definite.	3
E10	Mulvane No. 5 Mulvane, Summer County	City of Mulvane, Mulvane, KS	Oil		5		Jan. 1981		[e]5	[e]1		3

TABLE 35. - Future electric power plants in Kansas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E11	Wolf Creek Burlington, Coffey County	Kansas City Power & Light, Kansas City, MO, and Kansas Gas & Electric, Wichita, KS	Nuclear		1,150		June 1982		1,745	209	Presently uncertain as to whether plant will be built. Federal Regulatory Commission has not yet issued a license authorizing construction. Decision could be announced by May 1976.	2,3
E12	Sunflower No.3 Hays, Ellis County	Sunflower Electric Cooperative, Garden City, KS	Coal-[e]0.6		200		June 1983		[e]200	[e]25	Plans and site are not definite.	3

[e] Estimated, see appendix for explanation.

List of Data Sources for Kansas

1. Kansas Geological Survey, Topeka, Kans.

2. Federal Energy Administration Liaison Office, Topeka, Kans.

3. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

4. Kansas City Board of Public Utilities, Kansas City, Kans.

Louisiana

Data on the Louisiana projects listed below are presented in Tables 36 through 38. The map reference numbers correspond to the accompanying Louisiana map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Doc Bonin No. 3	City of Lafayette
E2	Houma No. 16	Houma Light & Water Department
E3	Rodemacher Nos. 2 and 3	Central Louisiana Electric Co.
E4	R. S. Nelson Nos. 5 and 6	Gulf States Utilities
E5	Waterford No. 3	Louisiana Power & Light Co.
E6	Big Cajun plant 2, Nos. 1 and 2.	Cajun Electric Power Coop.
E7	River Bend Nos. 1 and 2	Gulf States Utilities
Oil refineries:		
R1	Reserve Refinery	ECOL, Ltd.
R2	Chalmette Refinery	Tenneco Oil Co.
Natural gas processing plants:		
R3	Iowa Plant	Mobil Oil Corp.
R4	Patterson Plant	Placid Oil Co.
R5	Toca Plant	Shell Oil Co.
R6	Floodway Plant	Texaco, Inc.
R7	Lowry Plant	Superior Oil Co.

FIGURE 8. - Future fuels-related projects in Louisiana.

TABLE 36. - Future electric powerplants in Louisiana

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Doc Bonin No. 3 Lafayette, Lafayette Parish	City of Lafayette Utilities, Lafayette, LA	Gas/oil	3	185	3	Dec. 1976		e185	e23		1
E2	Houma No. 16 Houma, Terrebonne Parish	Houma Light & Water Dept., Houma, LA	Gas/oil	16	45	16	Nov. 1976	16	e45	e6		1
E3	Rodemacher Nos. 2,3 Boyce, Rapides Parish	Central Louisiana Electric Co., Pineville, La	Coal-3.5 (total, both units)	2 3 Total	510 510 1,020	2 3	Mar. 1980 Mar. 1983	2 3	600 600	50 30	Possibility of construction delay. Coal will be supplied by Kerr-McGee mine in Wyoming.	1
E4	R. S. Nelson Nos. 5 & 6 Westlake, Calacasie Parish	Gulf States Utilities, Baton Rouge, LA	Coal-5.0 (total, both units)	5 6 Total	540 540 1,080	5 6	late 1985 late 1986	5 6	e540 e540	e68 e68	Coal will be supplied by Kerr-McGee Mine in Wyoming.	1
E5	Waterford No. 3 Taft, St. Charles Parish	Louisiana Power & Light Company, New Orleans, LA	Nuclear	3	1,165	3	Jan. 1981	3	1,500	60	Under construction. Mississippi River will be water source.	1
E6	Big Cajun Plant Nos. 1 & 2 New Roads, Pointe Coupee Parish	Cajun Electric Power Cooperative	Coal-4.0 (total, both units)	1 2 Total	540 540 1,080	1 2	1979 1980	1 2	e540 e540	e68 e68	Has EPA clearance. Construction began in March 1976.	1
E7	River Bend Nos. 1,2 St. Francisville, W. Feliciana Parish	Gulf States Utilities, Baton Rouge, LA	Nuclear	1 2 Total	940 940 1,880	1 2	Oct. 1981 Oct. 1983	1 2	e940 e940	e118 e118	Limited construction permits. Site clearing underway.	1

e Estimated, see appendix for explanation.

TABLE 37. - Future oil refineries in Louisiana

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak Employment		Remarks	Data source
					Construc-tion	Opera-tion		
R1	Reserve Refinery Reserve, St. John the Baptist Parish	ECOL, Ltd.	Late 1976	200,000	2,200	150	New refinery	2
R2	Chalmette Refinery Chalmette, Orleans Parish	Tenneco Oil Company	Mid 1977	35,000 (expansion)			New crude unit	2

TABLE 38. - Future natural gas processing plants in Louisiana

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment		Remarks	Data source
					Construc-tion	Opera-tion		
R3	Iowa Plant near Iowa, Jefferson Davis Parish	Mobil Oil Corporation	July 1976	500	125	19	Cryogenic. Will process dry offshore gas. Output of final product is estimated at 250 thousand gallons per day.	2
R4	Patterson Plant Patterson, St. Mary Parish	Placid Oil Company	Sep. 1976	600	80	10	Cryogenic. Turbo-expander process. Will produce 420 thousand gallons of product per day.	2
R5	Toca Plant St. Bernard Parish	Shell Oil Company Houston, TX	Dec. 1976	210	25	0	Cryogenic process addition for more liquid extraction. Will produce 210 thousand gallons of product per day.	2
R6	Floodway Plant Berwick, St. Mary Parish	Texaco, Inc.	Apr. 1976	300	100	33	Turbo-expander process. Cryogenic. Will produce 302.4 thousand gallons of gas and liquefied petroleum gases per day.	2
R7	Lowry Plant Lake Arthur, Jefferson Davis Parish	Superior Oil Company	July 1976	Expansion - no increase in throughput			Cryogenic process. Expansion will produce 84 thousand gallons per day of ethane.	2

List of Data Sources for Louisiana

1. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

2. Oil and Gas Journal. October 6, 1975.

3. Jones, Owen W., U.S. Bureau of Mines State Liaison Officer, Baton Rouge, La.

Minnesota

Data on the Minnesota projects listed below are presented in Table 39.

The map reference numbers correspond to the accompanying Minnesota map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Sherburne Nos. 1-4	Northern States Power Co.
E2	Clay Boswell No. 4	Minnesota Power & Light Co.
E3	Northeast Station No. 2	Austin Utilities
E4	Wells No. 6	Wells Electric Association
E5	Brookston	Minnesota Power & Light Co.

FIGURE 9. - Future fuels-related projects in Minnesota.

TABLE 39. - Future electric powerplants in Minnesota

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Sherburne Nos. 1-4 Becker, Sherburne County	Northern States Power Company, Minneapolis, MN	Coal-9.0 (total, all units)	1 2 3 4 Total	680 680 800 800 2,960	1 2 3 4	May 1976 May 1977 May 1982 May 1984	Total	1,400	325	All 4 units to be operated as a single plant. Water source is Mississippi River.	1,2
E2	Clay Boswell No. 4 Cohasset, Itasca County	Minnesota Power & Light Company, Duluth, MN	Coal-[e]1.9		500		May 1980	Total	600-900	82	Units No. 1,2, & 3 are presently operational. Operation of 82 persons represent employment for plant expansion; total plant employment after expansion expected to be 175.	1,3
E3	Northeast Station No. 2 Austin, Mower County	Austin Utilities, Austin, MN	Coal-[e]0.1		44		May 1980		[e]45	[e]6		4
E4	Wells No. 6 Wells, Faribault County	Wells Electric Association, Wells, MN	Fuel oil		4		May 1981		[e]5	[e]1		4
E5	Brookston Brookston, St. Louis County	Minnesota Power & Light Company, Duluth, MN	Coal-3.2		800		1983		[e]800	[e]100	Plant siting requirements completed. Application made to the Minnesota Energy Agency for Certificate of Need.	1

[e] Estimated, see appendix for explanation.

List of Data Sources for Minnesota

1. Minnesota Energy Agency, St. Paul, Minn.

2. St. Paul Dispatch. January 16, 1976.

3. Duluth News Tribune. October 7, 1975.

4. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

Missouri

Data on the Missouri projects listed below are presented in Table 40.

The map reference numbers correspond to the accompanying Missouri map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E 1	Blue Valley Nos. GT1, GT2, and 4.	City of Independence
E 2	Northeast Nos. 13 and 14	Kansas City Power & Light Co.
E 3	Southwest Nos. 1 and 2	Springfield Utilities
E 4	Rush Island No. 2	Union Electric Co.
E 5	Greenwood Nos. 3-5	Missouri Public Service Co.
E 6	Substation No. 1	St. Joseph Light & Power Co.
E 7	New Madrid No. 2	Associated Electric Coop., Inc
-	Unsited	Union Electric Co.
-	Unsited, 10 units	Do.
E 8	Riverside No. 1	Kansas City Power & Light Co.
E 9	Iatan No. 1	Do.
-	Unsited, 5 units	Union Electric Co.
-	Clarence Cannon Nos. 1 and 2.	Southwestern Power Administration
-	Harry Truman Nos. 1-6	Do.
E10	Callaway Nos. 1 and 2	Union Electric Co.
-	Unsited, 2 units	Missouri Public Service Co.
E11	Asbury No. 2	Empire District Electric Coop.

FIGURE 10. - Future fuels-related projects in Missouri.

TABLE 40. - Future electric powerplants in Missouri

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Megawatts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Blue Valley Nos. GT1, GT2,4 Independence, Jackson County	City of Independence, Independence, MO	GT1 - Gas GT2 - Oil 4 - Coal-e0.5	GT1 GT2 4 Total	55 55 150 260	GT1 GT2 4	June 1976 Sep. 1979 June 1983	GT1 GT2 4	e55 e55 e150	e7 e7 e19		1
E2	Northeast Nos. 13 & 14 Kansas City, MO	Kansas City Power & Light Company, Kansas City, MO	Fuel oil	13 14 Total	58 58 106	13 14	June 1976 June 1976	Total	e116	e15		1
E3	Southwest Nos. 1 & 2 Springfield, Greene County	Springfield Utilities, Springfield, MO	Coal-e1.3 (total, both units)	1 2 Total	200 200 400	1 2	June 1976 June 1981	1 2	e200 e200	e25 e25		1
E4	Rush Island No. 2 Crystal City, Jefferson County	Union Electric Company, St. Louis, MO	Coal-e1.8		575		Apr. 1977		e575	e72		1
E5	Greenwood Nos. 3-5 Greenwood, Jackson County	Missouri Public Service Company, Kansas City, MO	Fuel oil	3 4 5 Total	52 73 60 185	3 4 5	May 1977 June 1979 June 1981	3 4 5	e52 e73 e60	e7 e9 e8		1
E6	Substation No. 1 St. Joseph, Buchanan County	St. Joseph Light & Power Company, St. Joseph, MO	Fuel oil		25		June 1977		e25	e3		1
E7	New Madrid No. 2 New Madrid, New Madrid County	Associated Electric Coop., Inc., Springfield, MO	Coal-e1.9		600		June 1977		e600	e75		1
--	Unsited	Union Electric Company, St. Louis, MO	Fuel oil		250		May 1978		e250	e31	Site and plans unknown. Unit reported to FPC as projected addition to company capacity.	1

TABLE 40. - Future electric powerplants in Missouri--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
--	Unsited Nos. 1-10	Union Electric Company, St. Louis, MO	Fuel oil	Total	600	1-10	May 1979	1-10	e600	e75	Ten 60 MW units planned. Probable peaking units in the St. Louis area but sites and plans are unknown. Units reported to FPC as projected additions to company capacity.	1
E8	Riverside No. 1 near Kansas City, MO	Kansas City Power & Light Company, Kansas City, MO	Fuel oil		100		Mar. 1979		e100	e13		1
E9	Iatan No. 1 near Weston, Platte County	Kansas City Power & Light Company, Kansas City, MO	Coal-e2.0		630		Mar. 1980		e630	e79		1
--	Unsited Nos. 1-5	Union Electric Company, St. Louis, MO	Fuel oil	Total	400		May 1980		e400	e50	Five 80 MW units planned. Probable peaking units in the St. Louis area but sites and plans are unknown. Units are reported to FPC as projected additions to company capacity.	1
--	Clarence Cannon Nos. 1 & 2	Southwestern Power Administration	Hydropower	1 2 Total	27 31 58	1 2	Dec. 1978 Dec. 1978	Total	e58	e7		1
--	Harry Truman Nos. 1-6	Southwestern Power Administration	Hydropower (Pump storage)	Total	162	1-6	Dec. 1980	Total	e162	e20		1

TABLE 40. - Future electric powerplants in Missouri--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E10	Callaway Nos. 1,2 Fulton, Callaway County	Union Electric Company, St. Louis, MO	Nuclear	1 2 Total	1,150 1,150 2,300	1 2	Oct. 1981 Apr. 1983	1 2	[e]1,150 [e]1,150	[e]144 [e]144		1
--	Unsited Nos. 1,2	Missouri Public Service Company, Kansas City, MO	Fuel oil	1 2 Total	60 60 120	1 2	June 1983 June 1983	Total	[e]120	[e]15	Site and plans are unknown. Units reported to FPC as projected additions to company capacity.	1
E11	Asbury No. 2 Asbury, Jasper County	Empire District Electric Coop., Joplin, MO	Coal-[e]1.0		300		June 1984		[e]300	[e]38		1

[e] Estimated, see appendix for explanation.

List of Data Sources for Missouri

1. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

Montana

Data on the Montana projects listed below are presented in Tables 41 through 44. The map reference numbers correspond to the accompanying Montana map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Decker mines	Decker Coal Co.
S2	Rosebud mines	Western Energy Co.
S3	Sarpy Creek (Absaloka)	Westmoreland Resources
S4	Circle West	Dryer Brothers Co.
S5	Youngs Creek, Tanner Creek, Squirrel Creek, Unnamed.	Shell Oil Co.
S6	Spring Creek	Pacific Power & Light Co.
S7	East Sarpy Creek	AMAX Coal Co.
S8	McCartney	Clay McCartney
-	Gustafson	WESCO Resources
Electric powerplants:		
E1	Libby Nos. 3-8	U.S. Army Corps of Engineers
E2	Libby Regulating Nos. 1-4	Do.
E3	Colstrip Nos. 2-4	Montana Power Co.
E4	Noxon Rapids No. 5	Washington Water Power Co.
-	Unsited, 2 units	Montana Power Co.
E5	Kootenai Falls	Northern Light, Inc.
E6	Buffalo Rapids	Montana Power Co.
E7	Energy Park	State of Montana
Coal conversion plants:		
C1	Circle West Project	Dryer Brothers Co.
-	Unnamed	Colorado Interstate Gas Co.
C2	...do	Northern Natural Gas Co.
C3	Energy Park	State of Montana
Coal slurry pipelines:		
1	Southeastern Montana to Houston, TX	Brown and Root, Inc., and Texas Eastern Transmission Corp.

FIGURE 11. - Future fuels-related projects in Montana.

TABLE 41. Future coal mines in Montana

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	East Decker Mine and north extension of West Decker Mine near Decker, Big Horn County (T 9 S, R 40 E)	Decker Coal Co., Decker, MT	Strip	6.6-1979 (expansion)	City of Austin, TX powerplant, Commonwealth Edison powerplants, Detroit Edison powerplants	Moist.-24.1% Ash-4.3% Sulfur-0.6% Btu/lb-9,400 Moist.-23.6% Ash-3.3% Sulfur-0.4% Btu/lb-9,700 Moist.-20.6% Ash-5.5% Sulfur-0.6% Btu/lb-9,900	26 (upper D1 seam) 18 (lower D1 seam) 15 (D2 seam)	50-170 (overburden) 4-70 (parting) 50-70 (parting)		[e]435	Mine will recover coal from 3 seams. Company produced an estimated 9.3 million tons in 1975 from the existing Decker Mine. Total production is estimated at 14-15 million tons in 1980 from the Decker Mine and the East Decker expansion. A 2.5 mile railroad spur line is also planned.	1,2
S2	Rosebud Mine Area B (new) Area A (expansion) Area D (new) Area C (new)	Western Energy Co., Billings, MT	Strip	19.1-1980 (expansion)	Colstrip power complex, Sherburne County, MN power complex	Moist.-24.6% Ash-8.9% Sulfur-0.7% Btu/lb-8,703	23	10-200		[e]1,260	1975 production estimated at 6.4 million tons. The estimated production capacity of 19.1 million tons in 1980 is contingent upon the construction of units 2, 3 and 4 of the Colstrip complex. Area B began production in 1976. Areas C and D will begin production in 1980.	1,2

TABLE 41. Future coal mines in Montana--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S3	Sarpy Creek (Absaloka) Crow Indian Reservation, Big Horn County	Westmoreland Resources, Billings, MT	Strip	6.5-1980 15.0-1982 (expansion)	Midwestern powerplants	Moisture-23% Ash-11% Sulfur-0.7% Btu/lb-8,500	30 (Rosebud-Mckay) 20 (Robinson)	60 (overburden) 60 (interburden)		e990	1975 production estimated at 4.0 million tons. 1982 production includes Tract II area.	1,3
S4	Circle West near Circle, McCone County (T 19 N, R 48 E)	Dryer Bros. Company (a subsidiary of Burlington Northern), Billings, MT	Strip	3.0-1980	Circle West Ammonia Plant and possible coal liquefaction in future	Moisture-34.9% Ash-6.9% Sulfur-0.5% Btu/lb-6,930	15	150	0	e200	Planned. Water permits pending.	4,5
S5	Youngs Creek, Tanner Creek, Squirrel Creek, Unnamed, Crow Indian Reservation, Big Horn County (T 9 S, R 38-39 E)	Shell Oil Company, Denver, CO	Strip	6.0-1980 16.0-1985		Moisture-24% Ash-3.5% Sulfur-0.25% Btu/lb-9,400	4 seams 12(C) 15(D) 30(C) 49(M)			e435	Four operations in the same area planned. Youngs Creek will be first developed. Production is projected to reach 32 million tons by 1992. Company has presently halted work on development. Reported recoverable reserves of 1.35 billion tons. Maximum employment estimates are for 1980.	6
S6	Spring Creek Mine, North of Decker, Big Horn County (T 8 S, R 39-40 E)	Pacific Power & Light Co., Portland, OR	Strip								In preliminary planning stages.	2

TABLE 41. - Future coal mines in Montana--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S7	East Sarpy Creek, Big Horn & Treasure Counties (T 2 N, R 38 E)	Amax Coal Company, Billings, MT	Strip								In preliminary planning stages.	2
S8	McCartney Blaine County	Clay McCartney	Strip								In preliminary planning stages.	2
--	Gustafson Mine	WESCO Resources	Strip		Existing Pacific Power & Light facilities	Moist.-25.1% Ash - 3.6% Sulfur-0.35% Btu/lb-9,373	80	20-240			In preliminary planning stages.	1

e Estimated, see appendix for explanation.

TABLE 42. - Future electric power plants in Montana

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Libby Nos. 3-8 N of Libby, Lincoln County	U.S. Army Corps of Engineers	Hydropower	3	105	3	Feb. 1976	3	e105	e14	An upgrading of Units 1-4 is planned for 1983.	7,8
				4	105	4	Apr. 1976	4	e105	e14		
				5	105	5	Oct. 1983	5	e105	e14		
				6	105	6	Jan. 1984	6	e105	e14		
				7	105	7	Apr. 1984	7	e105	e14		
				8	105	8	July 1984	8	e105	e14		
				Total	630							
E2	Libby Regulating Nos. 1-4 W of Libby, Lincoln County	U.S. Army Corps of Engineers	Hydropower	1	7	1	July 1983	Total	e42	e6	Regulating dam to prevent excessive fluctuation.	7
				2	12	2	Sep. 1983					
				3	12	3	Jan. 1984					
				4	12	4	Apr. 1984					
				Total	42							
E3	Colstrip Nos. 2-4 Colstrip, Rosebud County	Montana Power Co., Billings, MT	Coal-7.1 (total, all units)	2	330	1	July 1976		2,260	278	Additions to existing 330 MW No. 1 unit. The coal will be supplied by Western Energy's Rosebud mines.	5,7
				3	700	2	July 1980					
				4	700	3	July 1981					
				Total	1,730							

TABLE 42. - Future electric powerplants in Montana--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E4	Noxon Rapids No. 5 NW of Thompson Falls on Clark Fork River, Sanders County	Washington Water Power Company, Spokane, WA	Hydropower		125		Nov. 1977		e125	e16	Addition to existing units totaling 430 MW.	7,8
--	Unsited No. 1	Montana Power Co., Billings, MT	Coal-e1.1		350		1986	Total	e350	e44	Site and plans unknown. Unit is reported to FPC as proposed additions to company capacity.	7
E5	Kootenai Falls Kootenai River, Lincoln County	Northern Light, Inc.	Hydropower	140(2 units)			Not scheduled at present		e140	e17	Project is in planning stage. Schedules are not available.	8
E6	Buffalo Rapids Flathead River, Sanders County	Montana Power Co., Billings, MT and Kootenai Indian Tribe, MT	Hydropower		480		Not scheduled at present		e480	e80	Proposed project. Viability is undetermined at the present time.	8
E7	Energy Park Glasgow AFB, Valley County	State of Montana	Coal-e2.9 (total, all units)	1 2 3 Total	300 300 300 900		Not scheduled at present				See Energy Park in "Coal Conversion Plants" section following for further details.	11

e Estimated, see appendix for explanation.

TABLE 43. - Future coal conversion plants in Montana

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment Construction	Peak employment Operation	Remarks	Data source
C1	Circle West Project near Circle, McCone County	Dryer Bros. Company, Billings, MT (a subsidiary of Burlington Northern)	Ammonia plant and possible liquefaction	1980	Ammonia-1,000 tons per day			Feasibility studies on-going. Water permits pending. First stage requires 3 million tons of coal per year for production of 1000/T/day anhydrous ammonia. Using coal eliminates the need for 12 billion cubic feet annually of natural gas. Second stage is methanol plant and third stage is diesel fuel plant. All three stages would use 10 million tons of coal annually. An agreement was signed in December 1975 between the company and the State of Montana regarding company payments to the State for an 18 month environmental study.	5,9
--	SE Montana	Colorado Interstate Gas Co., Colorado Springs, CO	Gasification	unknown	250 million cubic feet per day	e1,125	e600	Westmoreland Coal Company would supply coal at an estimated rate of 25,000 tons per day.	5
C2	Unnamed Northern Cheyenne Indian Reservation, Big Horn or Rosebud Counties (also NE Wyoming)	Northern Natural Gas Company, Omaha, NE	Gasification	1981 2 units 1984-2 units	4 units-250 million cubic feet per day (ultimate Montana capacity will be 500 million cubic feet per day)	e2,250	e1,200	Ultimately 4 plants, each of 250 million cubic feet per day capacity. Two plants proposed for Northern Cheyenne Reservation and two for a site NE of Gillette, Wyoming. Peabody Coal Company will supply coal at an estimated rate of 27,100 tons per day for each of the 4 units. Employment estimates represent totals for Montana only.	5,10

TABLE 43. - Future coal conversion plants in Montana--Continued

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
C3	Energy Park Glasgow AFB, Valley County	State of Montana	Gasification and liquefaction	unknown	See Remarks			Recent study entitled "Site Suitability for an Energy Center at Glasgow AFB, Montana" discloses the possibility of an energy concept to be developed in two stages. Stage I would entail 2 units of syncrude about 50,000 barrels per day and 400 million cubic feet per day, 1 Lurgi 250 million cubic feet per day unit, and a 300 MW generating plant. Stage II would entail 2 syncrude units of the above capacity, and 2 generating units of 300 MW capacity each. In addition the governor has created a task force to determine the feasibility of constructing a gasification plant in Montana to satisfy in-state demands. The study group will determine the capital required, the type of plant, location, ownership (state, private, or joint) or other alternatives to alleviate Montana's reliance on Canadian natural gas. ERDA is contemplating a 50 MW MHD electric generating unit near Butte, MT.	11

© Estimated, see appendix for explanation.

TABLE 44. - Future coal slurry pipelines in Montana

Map ref. no.	Operating company	Proposed route: Origin	Proposed route: Destination	Initial operating date	Capacity million tons per year	Length miles	Pipe diameter inches	Water source and requirements, acre-feet per year	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Brown & Root, Inc., Houston, TX and Texas Eastern Transmissions Corp., Houston, TX	Southeastern Montana (Big Horn or Rosebud Counties)	Houston, TX	unknown	22-29	1,260	36-40				Proposed line will transverse southeastern Montana, Wyoming, Nebraska, Oklahoma, and Texas. Planning is in progress.	12,13, 14

List of Data Sources for Montana

1. Montana Lieutenant Governors Office, Helena, Mont.

2. State of Montana Department of Lands, Helena, Mont.

3. Coal Age. New Coal Mine Development and Expansion Survey, February 1976.

4. Great Falls Tribune. September 18, 1975.

5. Montana State Legislature. Montana Energy Policy Study, June 1975.

6. Denver Post. September 24, 1975.

7. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

8. Harper, Zane. Bonneville Power Administration.

9. Federal Energy Administration, Region VIII, Denver, Colo.

10. Coal Age. March 1975.

11. Report to the State of Montana. Site Suitability for an Energy Center at Glasgow AFB, Montana.

12. Western Resources Wrapup. February 19, 1976.

13. Denver Post. November 23, 1975.

14. Rocky Mountain News. November 16, 1975.

Nebraska

Data on the Nebraska projects listed below are presented in Table 45. The map reference numbers correspond to the accompanying Nebraska map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Fremont No. 8	City of Fremont
E2	Gentleman Nos. 1 and 2	Nebraska Public Power District
E3	Nebraska City No. 1	Omaha Public Power District
E4	Laramie No. 2	City of Lincoln
-	Unsited, 5 units	Nebraska Public Power District
E5	Fort Calhoun No. 2	Omaha Public Power District

FIGURE 12. - Future fuels-related projects in Nebraska.

TABLE 45. - Future electric power plants in Nebraska

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity: Unit no.	Planned capacity: Mega-watts	Initial operating date: Unit no.	Initial operating date: Month and year	Peak employment: Unit no.	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
E1	Fremont No. 8 Fremont, Dodge County	City of Fremont, Fremont, NE	Coal-0.14		92		May 1976		150	40	Addition to existing plants totaling 38 MW.	1
E2	Gentleman Nos. 1,2 Sutherland, Lincoln County	Nebraska Public Power District, Columbus, NE	Coal-4.0 (total, both units)	1 2 Total	600 600 1,200	1 2	May 1978 May 1980	1 2	e600 e600	e75 e75	Sutherland Reservoir is planned water source. Railroad spur to plant is also planned.	2,3
E3	Nebraska City No. 1 Nebraska City, Otoe County	Omaha Public Power District, Omaha, NE	Coal-2.5		575		Jan. 1979		e575	e72	Three mile railroad spur to plant is also planned.	2
E4	Laramie No. 2 Lincoln, Lancaster County	City of Lincoln, Lincoln, NE	Coal-0.7		200		June 1980		e200	e25		2
	Unsited Nos. 1-5	Nebraska Public Power District, Columbus, NE	Hydropower (pump storage)	1 2 3 4 5 Total	200 200 200 200 200 1,000	1 2 3 4 5 Total	May 1981 May 1981 May 1982 May 1982 May 1982 1,000	Total	e1,000	e125	Sites and plans are unknown at present time.	2,3
E5	Ft. Calhoun No. 2 Ft. Calhoun, Washington County	Omaha Public Power District, Omaha, NE	Nuclear		1,150		Jan. 1983		2,000	70	Addition to 457 MW existing unit. 1 mile railroad spur to plant is also planned.	2,4,5

e Estimated, see appendix for explanation.

List of Data Sources for Nebraska

1. City of Fremont, Nebr. Department of Public Utilities.

2. Federal Power Commission. Proposed Generating Capacity Change for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

3. Nebraska Public Power District, Columbus, Nebr.

4. Omaha Public Power District, Omaha, Nebr.

5. U.S. Energy Research and Development Administration. Eleven Nuclear Power Reactors Announced in 1975. News release, January 26, 1976.

Nevada

Data on the Nevada projects listed below are presented in Tables 46 and 47. The map reference numbers correspond to the accompanying Nevada map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Harry Allen Nos. 1-4	Nevada Power Co.
E2	North Valmy Nos. 1 and 2	Sierra Pacific Power Co.
Potential geothermal facilities:		
G1	Esmeralda County	Magma Power Co.
G2	Mineral County	Al-Aquitane Ltd.
G3	Churchill County	Do.
G4	...do	Anadarko Production Co.

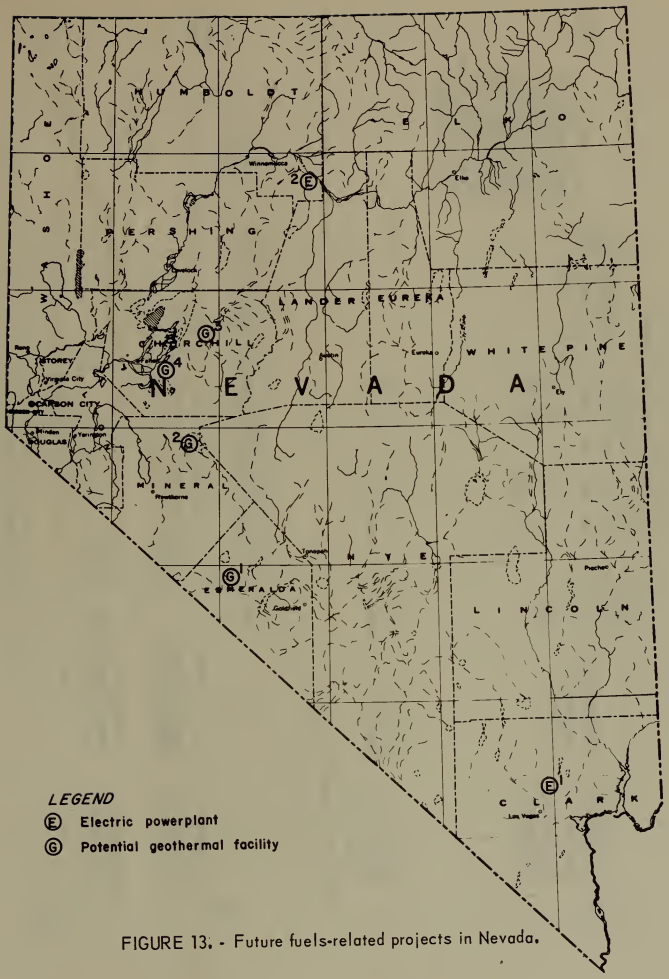

FIGURE 13. - Future fuels-related projects in Nevada.

TABLE 46. - Future electric powerplants in Nevada

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Harry Allen Nos. 1-4 near Las Vegas, Clark County (T 17 S, R 63 E)	Nevada Power Co., Las Vegas, NV	Coal-9.1 (total, all units)	1	500	1	June 1982	Total	e2,000	e250	Nevada Public Service Commission has not received application for plant. Employment estimated represent total for all units. A coal slurry pipeline is planned to transport coal from Alton, Utah to plant. Four mile railroad spur to plant is planned.	1,2,5
				2	500	2	June 1983					
				3	500	3	June 1984					
				4	500	4	June 1985					
				Total	2,000							
E2	North Valmy Nos. 1 & 2 Valmy, Humboldt County (T 35 N, R 43 E)	Sierra Pacific Power Company, Reno, NV	Coal-1.0 (total, both units)	1	250	1	Oct. 1980		450	50-60		1,2,5
				2	250	2	Oct. 1983					
				Total	500							

e Estimated, see appendix for explanation.

TABLE 47. - Potential geothermal facilities in Nevada

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	Esmeralda County (T 1 S, R 36 E)	Magma Power Company, Los Angeles, CA	1 exploratory hole has been drilled to a depth - 9170+ feet	3
G2	Mineral County (T 12 N, R 33 E, T 12 N, R 34 E)	Al-Aquitaine Ltd., Calgary, Alberta Canada	Company is drilling 16 shallow temperature gradient holes, each to a depth of 500 feet.	3

TABLE 47. - Potential geothermal facilities in Nevada--Continued

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G3	Churchill County (T 20 N, R 34 E T 21 N, R 34 E)	Al-Aquitaine Ltd., Calgary, Alberta, Canada	Drilling 16 shallow temperature gradient holes, 500 feet each.	3
G4	Churchill County (T 16 N, R 30 & 31 E) (Salt Wells)	Anadarko Production Company, Huston, TX	Company is drilling 30 shallow temperature gradient holes, each to a depth of 500 feet.	3
			In addition to the above, exploratory drilling will continue or begin in the following locations in Nevada: Black Rock Desert, Dixie Valley, San Emidio, Ruby Valley, Steamboat Springs, Carson Desert and Beowawe.	4

List of Data Sources for Nevada

1. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

2. Nevada Public Service Commission. Carson City, Nev.

3. U.S. Bureau of Land Management, Reno, Nev.

4. Current Status of the Geothermal Industry in the U.S. A document obtained by U.S. Bureau of Mines, Colorado State Liaison Office, from George Nielsen, U.S. Bureau of Land Management.

5. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

New Mexico

Data on the New Mexico projects listed below are presented in Tables 48 through 55. The map reference numbers correspond to the accompanying New Mexico map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Burnham Complex	Consolidation Coal Co.
S2	Navajo	Utah International, Inc.
S3	San Juan	Do.
S4	McKinley	Pittsburg and Midway Coal Co.
S5	West York Strip	Kaiser Steel Corp.
S6	Star Lake	Peabody Coal Co.
U7	York Canyon No. 1	Kaiser Steel Corp.
S8	Gamerco	Carbon Coal Co.
Electric powerplants:		
E1	San Juan Nos. 1, 3, 4	Public Service Company of New Mexico.
Coal conversion plants:		
C1	Burnham Complex	El Paso Natural Gas Co.
C2	WESCO Project	Western Gasification Co.
Potential geothermal facilities:		
G1	Valles Caldera area	Union Oil Company, ERDA, Los Alamos National Laboratories
Railroads:		
1	Star Lake mine to Prewitt, NM	Santa Fe Railroad
Coal slurry pipelines:		
1	Star Lake mine to St. Johns, AZ	Salt River System
2	Farmington to Walsenburg, CO	Houston Natural Gas Co., and DRGW Railroad
Uranium mines:		
M 1	Mt. Taylor	Gulf Mineral Resources Co.
M 2	JJ No. 1	SOHIO and Reserve Oil and Minerals Corp.

Map ref. no.	Project name	Company or agency
Uranium mines--Continued:		
M 3	Johnny M.	Ranchers Exploration & Development Corp. and Houston Natural Gas Co.
M 4	Unnamed	Phillips Petroleum Co.
M 5	...do	Kerr-McGee Corp. and United Nuclear Corp.
M 6	Unnamed	Conoco
M 7	...do	Mobil Oil Corp.
M 8	...do	United Nuclear Corp.
M 9	...do	The Anaconda Company
M10	...do	Western Nuclear, Inc.
M11	Smith Lake	Do.
M12	Unnamed	SOHIO
Uranium mills:		
A1	L-Bar Project	SOHIO, and Reserve Oil and Minerals Corp.
A2	Mt. Taylor	Gulf Mineral Resources Co.
A3	Unnamed	Beker Industries

FIGURE 14. - Future fuels-related projects in New Mexico.

TABLE 48. - Future coal mines in New Mexico

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment		Remarks	Data source
									Present	Maximum		
S1	Burnham Complex Mine near Burnham, San Juan County	Consolidation Coal Co., Pittsburgh, PA	Strip	29.5 - date uncertain	Burnham Coal Gasification complex		multiple	250 maximum	0	955	Development date is dependent on construction of Burnham coal gasification complex.	1,2
S2	Navajo Mine north of Burnham, San Juan County	Utah International, Inc., San Francisco, CA	Strip	41.0 - date uncertain (expansion)	4-Corners powerplant, WESCO gasification plant, San Juan powerplant		11 - 14		480	1,600	Development date for coal gasification market is indefinite. Employment and production figures are listed under the assumption that 4 gasification units are constructed. 1974 production estimated at 7 million tons.	2,3
S3	San Juan Mine north of Kirtland, San Juan County	Utah International, Inc., San Francisco, CA	Strip	5.8 - 1980 (expansion)	San Juan powerplant		4 - 16		70	150	Operated by Utah International for Western Coal Company (New Mexico Public Service Company). 1974 production estimated at 1 million tons.	2
S4	McKinley Mine near Gallup, McKinley Co.	Pittsburg & Midway Coal Co., Kansas City, MO	Strip	5.0 - 1980 (expansion)	Cholla powerplant and other power markets		5 - 6		56	300	Mine expansion in progress. 1974 production estimated at 0.5 million tons.	4
S5	West York Strip near Raton, Colfax County	Kaiser Steel Corp., Fontana, CA	Strip	0.5 - 1976 (expansion)	Fontana, CA steel mill		7 - 12		80	e95	Strip operations to be expanded. 1974 production estimated at 0.4 million tons.	5

TABLE 48. - Future coal mines in New Mexico--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S6	Star Lake mine northeast McKinley County	Peabody Coal Company, St. Louis, MO	Strip	3.0 - 1981	Coronado electric generating station		6 - 10	150 - 250	0	e240	Railroad spur in final planning stage. Initial coal production anticipated in late 1978.	6
U7	York Canyon No. 1 near Raton, Colfax Co.	Kaiser Steel Corp. Fontana, CA	Underground	0.7 (expansion)	Fontana, CA steel mill				285	e335	Employment includes preparation plant employees and a large number of mine development personnel. 1974 production estimated at 0.5 million tons.	7
S8	Gamerco 3 miles NW of Gallup, McKinley Co.	Carbon Coal Company	Strip	1.5	Benson, AZ powerplant				0	138	Mining plans submitted to New Mexico Surface Coal Mining Commission and Environmental Improvement Agency. Public hearings to be held.	14

e Estimated, see appendix for explantion.

TABLE 49. - Future electric powerplants in New Mexico

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	San Juan Nos. 1, 3, 4 Waterflow, San Juan County	Public Service Co. of New Mexico, Albuquerque, NM	Coal-5.8 (total, all units)	1	340	1	Dec. 1976	Total	1,300	161	First unit constructed was the No. 2 unit with a capacity of 330 MW. Coal supplied by Utah International's San Juan mine. Plant will use 20,200 acre-feet of water annually from the San Juan River.	2
				3	500	3	May 1978					
				4	500	4	May 1980					
				Total	1,340							

TABLE 50. - Future coal conversion plants in New Mexico

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
C1	Burnham Coal Gasification Complex 35 miles southwest of Farmington, San Juan County	El Paso Natural Gas Company, El Paso, TX	Gasification-Lurgi process	uncertain	288 MMcfd - Plant 1 785 MMcfd - Final capacity (achieved through upgrading of first unit and construction of additional plant)	3,800	1,876	Current reports are that project has been delayed indefinitely. Due to inflation total complex costs are estimated at $2 billion. A 6-year construction period is anticipated. 28,250 acre-feet of water per year will be diverted and pipelined from San Juan River. 28,250 tons of coal per day will be required as feedstock to Plant 1.	1, 2
C2	WESCO Coal Gasification Project 30 miles southwest of Farmington, San Juan County	Western Gasification Company (a joint-venture of Texas Eastern Transmission Corp., Houston, TX, and Pacific Lighting Corp., Los Angeles, CA)	Gasification-Lurgi process	uncertain	Plant 1 - 250 MMcfd Plant 2 - 250 MMcfd Plant 3 - 250 MMcfd Plant 4 - 250 MMcfd Total - 1,000 MMcfd	4,300	2,400	Current reports are that project has been delayed indefinitely. Due to inflation total cost for the four plants are estimated at $4 billion. A 9-year construction period is anticipated. Water requirements are estimated at 33,040 acre-feet per year. 102,300 tons of coal per day will be required as feedstock for the 4 plants.	1,2

TABLE 51. - Potential geothermal facilities in New Mexico

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	Baca #1 Land Grant Valles Caldera, Sandoval County	Union Oil Company, Los Angeles, CA	Approximately 9 producible wells, of about 15 holes, drilled in 10 square-mile area; negotiations with utility over contract to sell steam. Forecast: 1975-76--Continued drilling of development wells and testing of field; possible agreement to construct 50 MW flashed-steam powerplant. 1977-79--Drilling of wildcat holes by other operators; construction of first plant; continued development drilling. 1980-85--Further construction of plant facilities; definition of field dimensions, continued drilling and testing. Map location is county specific.	9

TABLE 51. - Potential geothermal facilities in New Mexico--Continued

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	Baca #1 Land Grant Valles Caldera, Sandoval County	Energy Research & Development Administration, Los Alamos National Laboratories	2 holes drilled west of Caldera as research project by Los Alamos Laboratory; testing and evaluation. Forecast: 1975-76--Continued testing and evaluation; probable attempt to generate fractures between holes by pumping water under great pressure. 1977-79--Continued fracturing and evaluation of results; possible drilling of additional holes. 1980-1985--Possible decision to develop pilot facilities for heat exchanging in fractured holes. Map location is county specific.	9

TABLE 52. - Future coal slurry pipelines originating in New Mexico

Map ref. no.	Operating company	Proposed route		Initial operating date	Capacity, million tons per year	Length, miles	Pipe diameter, inches	Water source and requirements, acre-feet per year	Peak employment		Remarks	Data source
		Origin	Destination						Construction	Operation		
1	Salt River System, Phoenix, AZ	Star Lake, McKinley County	Coronado powerplant, St. Johns, AZ	indefinite	4.0	180	16	indefinite			This project is in the early stages of planning. Nothing definitive to date.	10
2	Houston Natural Gas and DRGW railroad	Farmington, San Juan County	Walsenburg, CO	1980	5.0	167	12				Line will join main slurry line at Walsenburg for coal transport to Houston, TX	15

TABLE 53. - Future Railroads (related to fuels development) in New Mexico

Map ref. no.	Operating company	Proposed route		Length, miles	Type	Initial operating date	Peak employment		Remarks	Data source
		Origin	Destination				Construction	Operation		
1	Santa Fe Railroad, Chicago, IL	Proposed Star Lake mine, McKinley County	Santa Fe mainline at Prewitt, McKinley Co.	72	spur	Sept. 1978			The spur line will transport coal produced by Peabody's Star Lake mine for consumption at the Coronado powerplant near St. Johns, AZ.	7

TABLE 54. - Future uranium mines in New Mexico

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity in year	Employment Present	Employment Maximum	Remarks	Data source
M1	Mt. Taylor Mine southern McKinley County	Gulf Mineral Resources Co., Denver, CO	Underground				Contractor currently sinking 124- and 114-foot diameter shafts, each of which is 3,500 feet in depth. Start of production in 1978.	5, 11
M2	JJ #1 Mine L-Bar Ranch, Valencia County	SOHIO and Reserve Oil & Minerals Corp.	Underground	0.55 million tons per year-1976			Mine currently under development.	5, 11
M3	Johnny M Mine near Grants, Valencia County	Ranchers Exploration & Development Corp., and Houston Natural Gas Company	Underground	0.25 million tons per year-1976			Employment is in a state of transition between development and production. No figures are available to date.	5
M4	Unnamed McKinley County (T 19 N, R 11 W)	Phillips Petroleum Co., Bartlesville, OK	Underground				New discovery announced in excess of 25 million pounds of U_3O_8 at 5,000-foot depth.	12, 13 15
M5	Unnamed McKinley County (T 17 N, R 16 W)	Kerr-McGee Corp., and United Nuclear Corp.	Underground				Commercial quantities of ore reported.	12, 13 15
M6	Unnamed Crownpoint area, McKinley County	Conoco, Denver, CO	Underground				Commercial quantities of ore reported.	12, 13 15
M7	Unnamed Crownpoint area, McKinley County	Mobil Oil Corp.	Underground				Commercial quantities of ore reported.	12
M8	Unnamed McKinley County (T 17 N, R 14 W)	United Nuclear Corp.	Underground	3,000 tons per day of ore			Commercial quantities of ore reported. Start-up in 1977.	11

TABLE 54. - Future uranium mines in New Mexico--Continued

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity, in year	Employment: Present	Employment: Maximum	Remarks	Data source
M9	Unnamed Laguna Reservation, Valencia County	The Anaconda Company, Englewood, CO	Open pit	12,000 tons per week of ore				11
M10	Unnamed Grants, Valencia County	Western Nuclear, Inc., Lakewood, CO	Underground				New mine, under construction. Start-up in 1976.	11
M11	Smith Lake McKinley County	Western Nuclear, Inc., Lakewood, CO	Underground				New mine, under construction. Start-up in 1976.	11
M12	Unnamed Northern Valencia County	SOHIO	Underground	1,000 - 1,200 tons per day of ore.			Start-up in 1976.	11

TABLE 55. - Future uranium mills and enrichment facilities in New Mexico

Map ref. no.	Plant name and location	Operating company	Type	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
A1	SOHIO L-Bar Uranium Project Valencia County	SOHIO and Reserve Oil & Minerals Corp.	Ion exchange	June 1976	550 tons per day		75	Employment includes all support facilities. Ore from developing L-Bar Ranch mine.	5
A2	Mt. Taylor Mine Valencia County	Gulf Mineral Resources Co., Denver, CO						Location, type and size of mill to be announced at a later date. If required, first production will be tolled by Kerr-McGee.	5
A3	Unnamed Carlsbad, Eddy County	Beker Industries	Enrichment-uranium hexafluoride conversion	1978	23,500 tons per year of uranium hexafluoride		150	Beker Industries has announced their intent to build this plant. Specifications are currently being prepared.	11

List of Data Sources for New Mexico

1. U.S. Bureau of Reclamation. Draft Environmental Impact Statement, El Paso Coal Gasification Project, 1974.

2. U.S. Department of the Interior. Status Report on Natural Resources Development Projects with Major Potential Impact upon San Juan County, New Mexico. Staff Office of the Secretary-Southwest Region, October 1975.

3. U.S. Bureau of Reclamation. Draft Environmental Impact Statement, Four-Corners Powerplant and Navajo Mine, 1975.

4. U.S. Department of Agriculture, Forest Service. Cholla Powerplant Environmental Impact Statement, 1975.

5. U.S. Bureau of Mines State Liaison Office, Albuquerque, N. Mex.

6. State of New Mexico. New Mexico State Mine Inspectors Annual Report, 1975.

7. Coal Age. Peabody and Santa Fe Railroad Units Set Coal Supply for Salt River Project, September 1975.

8. U.S. Bureau of Reclamation. Draft Environmental Impact Statement, WESCO Coal Gasification Project, 1974.

9. Los Alamos National Laboratories, Los Alamos, N. Mex.

10. Oil and Gas Journal. June 30, 1975.

11. Engineering and Mining Journal. 1976 E/MJ Survey of Mine and Plant Expansion, January 1976.

12. Phillips Petroleum Company. Letter to New Mexico Representative Lujan. On file at U.S. Bureau of Mines State Liaison Office, Albuquerque, N. Mex.

13. Engineering and Mining Journal. 107th Annual Review and Outlook, March 1976.

List of Data Sources for New Mexico--Continued

14. Gallup Independent. March 2, 1976.

15. Walsenburg Huerfano World. April 22, 1976.

North Dakota

Data on the North Dakota projects listed below are presented in Tables 56 through 58. The map reference numbers correspond to the accompanying North Dakota map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Coteau	The Coteau Properties Co.
S2	Falkirk	The Falkirk Mining Co.
S3	Gascoyne	Knife River Coal Mining Co.
S4	Beulah	Do.
S5	Glenharold	Consolidation Coal Co.
S6	Center	Baukol-Noonan, Inc.
S7	Unnamed	AMAX Coal Co.
S8	...do	Peabody Coal Co.
S9	...do	Tenneco Coal Co.
Electric powerplants:		
E1	Jamestown Nos. 1 and 2	Otter Tail Power Co.
E2	Square Butte	Minnkota Power Cooperative, Inc.
-	Unsited, 2 units	Basin Electric Power Cooperative
E3	Coal Creek Nos. 1 and 2	United Power Association
E4	Antelope Valley Station Nos. 1 and 2.	Basin Electric Power Cooperative
E5	Coyote I	Montana-Dakota Utilities Co.
Coal converions plants:		
C1	Unnamed	American Natural Gas
C2	Dunn Center	Natural Gas Pipeline Co. of America.
C3	Unnamed	Tenneco Coal Co.
C4	...do	El Paso Natural Gas Co.
C5	...do	Peabody Coal Co.

LEGEND

Ⓢ Strip coal mine

Ⓔ Electric powerplant

Ⓒ Coal conversion plant

FIGURE 15. - Future fuels-related projects in North Dakota.

TABLE 56. - Future coal mines in North Dakota

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	Coteau Mine near Beulah, Mercer County (T 145-146 N, R 87-88 N)	The Coteau Properties Company (a subsidiary of The North American Coal Corporation) Bismarck, ND	Strip (lignite)	14.0-1984	American Natural Gas Company Coal Gasification plant and proposed powerplant complex	Moisture-36.0% Ash-7.4%	5-17	120 (maximum)	12	360	Coal production estimates are for powerplant and the gasification complex. Recent announcements indicate that the plans for the gasification plant have changed. A 125 MMcfd is scheduled for completion by 1981. This will be followed by an additional 125 MMcfd unit to double capacity.	1,2,3
S2	Falkirk Mine near Falkirk, McLean County (T 144 N, R 82-83 W)	The Falkirk Mining Co., (a subsidiary of the North American Coal Corporation) Bismarck, ND	Strip (lignite)	5.0-6.0-1981	Coal Creek powerplant complex	Moisture 39.5% Ash-6.8% Sulfur-0.6% Btu/lb-6,415	2 seams, average for both is 11 feet	120 (maximum)	21	300	Mine development began in August 1975. Start-up projected in mid-1978.	3,4,5
S3	Gascoyne Mine near Gascoyne, Bowman County (T 130-131 N, R 99 W)	Knife River Coal Mining Company, Bismarck, ND	Strip (lignite)	2.5-3.0-1976 (expansion)	Big Stone powerplant	Moisture-43% Ash-5.0-8.5% Btu/lb-5,900-6,250	2 seams each 8 ft. separated by 15 ft. clay interburden	30	73	73	Mine expansion completed in 1975. Possibility of further expansion when second unit of Big Stone power complex is completed. 1975 production estimated at 2.0 million tons.	5,6,7

TABLE 56. - Future coal mines in North Dakota--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S4	Beulah Mine near Beulah, Mercer and Oliver Counties, (T 143 N, R 87-88 W)	Knife River Coal Mining Company, Bismarck, ND	Strip (lignite)	4.3-1981 (expansion)	Proposed Coyote I powerplant	Moisture-34-37% Ash-5-8% Sulfur-0.5-0.7% Btu/lb-6,700-6,900		50-120	e110	e280	1975 production estimated at 1.3 million tons.	3,6,7
S5	Glenharold Mine, near Stanton, Mercer and Oliver Counties (T 144 N, R 84 W)	Consolidation Coal Company, Stanton, ND	Strip (lignite)	3.8-1976 (expansion)	Leland Olds powerplant, Units 1&2	Moisture-37-42% Ash-4.0-6.5% Sulfur-0.3-1.0% Btu/lb-6,000-7,000	2 seams, each 8 ft.	40	147	147	Leland Olds Unit became operational in September, 1975. Mine will reach peak production estimate in 1976. 1975 production estimated at 2.0 million tons.	7,8,9, 10
S6	Center Mine near Center, Oliver County (T 141 N, R 84 W)	Baukol-Noonan, Inc., Minot, ND	Strip (lignite)	4.4-1978 (expansion)	Square Butte powerplant	Moisture-39% Ash-6.2% Sulfur-0.6% Btu/lb-6,650	11	52	38	80	1975 production estimated at 1.6 million tons.	11,12,13, 14
S7	Unnamed near Dunn Center, Dunn County (T 145 N, R 93 W)	Amax Coal Company, Bismarck, ND	Strip (lignite)	13.0-14.0-1982	Proposed Natural Gas Pipeline Co. of America coal gasification plant	Moisture-34.0% Ash-8.0% Sulfur-0.8% Btu/lb-6,800	17-18	50 (maximum)	0	300	There is considerable opposition by area landowners and environmental groups which may cause delays. The proposed gasification plant may increase to four units requiring 52 million tons per year in the 1990's.	3,15,16, 17

TABLE 56. - Future coal mines in North Dakota--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S8	Unnamed Heart Butte area, Grant County	Peabody Coal Company, St Louis, MO	Strip (lignite)		mine-mouth coal gasification complex							18,19
S9	Unnamed South of Beach, Golden Valley County	Tenneco Coal Company, Billings, MT	Strip		mine-mouth gasification						Plans uncertain. Tenneco Coal Co. controls 1 billion tons of coal. May possibly be considering an uranium enrichment plant.	1,19

e Estimated, see appendix for explanation.

TABLE 57. - Future electric powerplants in North Dakota

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Megawatts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Jamestown Nos. 1,2 Jamestown, Stutsman County	Otter Tail Power Company, Fergus Falls, MN	Unknown	1	24	1	Nov. 1976	1	e25	e3	For peaking purposes.	20
				2	24	2	Nov. 1978	2	e25	e3		
				Total	48							
E2	Square Butte Center, Oliver County	Minnkota Power Cooperative, Inc., Grand Forks, ND	Lignite-2.5		400		May 1977		750	30	Plant is an addition to the existing 235 MW M.R. Young Plant. Baukol-Noonan's Center mine will supply coal. Plant will consume 26,000 acre-feet of water annually from the Missouri River. Water permit was approved by the state and plant is now under construction.	1,3,20

TABLE 57. - Future electric powerplants in North Dakota--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
--	Unsited Nos. 1,2	Basin Electric Power Cooperative, Stanton, ND	Unknown	1 2 Total	66 66 132	1 2	June 1977 June 1977	1 2	e66 e66	e8 e8	Location and plans are unknown. Units are reported to FPC as projected additions to company's capacity.	1
E3	Coal Creek Nos. 1 & 2 near Falkirk, McLean County	United Power Association & Cooperative Power Assoc., Bismarck, ND	Lignite-5.0-6.0 (total, both units)	1 2 Total	450 450 900	1 2	1978 1981	Total	980	485	Plant construction is in progress. Coal will be supplied by the Falkirk mine. Plants will require 15,000 acre-feet of water annually from the Missouri River. Water permit was approved by the State.	1,3,4, 20
E4	Antelope Valley Station Nos. 1,2 9 miles N of Beulah, Mercer County	Basin Electric Power Cooperative, Bismarck, ND	Lignite-5.8 (total, both units)	1 2 Total	450 450 900	1 2	1981 1984	Total	847	70	Coal will be supplied by the Coteau mine. Plant will require 19,000 acre-feet of water annually from Lake Sakakawea. State water permit was granted. Possible addition of a third 450 MW unit in 1989.	1,3,20
E5	Coyote I Beulah, Mercer County	Montana-Dakota Utilities Co., Bismarck, ND	Lignite-2.5		440		1981		770	70	Coal will be supplied by Knife River Coal Company's Beulah Mine. Plant will require 11,000 acre-feet of water annually from Lake Sakakawea. State water permit was granted. Possible addition of 440 MW second unit.	1,3,20

e Estimated, see appendix for explanation.

TABLE 58. - Future coal conversion plants in North Dakota

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
C1	Unnamed 6 miles northwest of Beulah, Mercer County (T 145 N, R 88 W)	American Natural Gas Coal Gasification Co., Bismarck, ND	Gasification-Lurgi process	Unit 1-1982 Unit 2-unknown (after 1982)	Unit 1-125 million cubic feet per day Unit 2-125 million cubic feet per day	2,323	[e]350	Considerable opposition, environmental and financial problems may delay construction schedule. Plant has conditional permit from state for 17,000 acre-feet of water from Lake Sakakawea annually. Unit 1 will consume approximately 5 million tons of lignite annually. Coal will be supplied by the Coteau mine.	1,3,15, 21
C2	Dunn Center near Dunn Center, Dunn County	Natural Gas Pipeline Company of America, Bismarck, ND	Gasification Lurgi process	Unit 1-1982 Units 2-4 uncertain	Unit 1-250-Unit 2-250-Unit 3-250-Unit 4-250-million cubic feet per day	Unit 1-2,959	Unit 1-625	Environmental concerns, Federal leasing, local opposition, and financial problems may delay construction. Plant will consume 13-14 million tons of lignite annually, to be supplied by AMAX Coal Company's proposed mine near plant site. The 4-unit complex will consume 70,000 acre-feet of water from Lake Sakakawea annually. Water permit was denied at May 24, 1976 Water Commission hearing.	1,3
C3	Unnamed South of Beach, Golden Valley County	Tenneco Coal Company, Billings, MT	Gasification					Initial planning stages. Possible water source is the Yellowstone River. Company plans are presently unknown. Tenneco controls 1 billion tons of coal. Site is not determined and plant may possibly be located in southeastern Montana. Uranium enrichment plant may be alternative to the gasification plant, also.	1,19
C4	Unnamed Stark, Dunn, and Bowman Counties	El Paso Natural Gas Company, El Paso, TX	Gasification	1990	Unit 1-250-Unit 2-250-Unit 3-250-Unit 4-250-Total 1,000 million cubic feet per day	Unit 1-[e]1,125	Unit 1-[e]600	Site and plans are uncertain. The company has withdrawn an application for 71,000 acre-feet of water annually from Lake Sakakawea, but will reapply. Each unit will consume 12 million tons of lignite annually.	19
C5	Unnamed Heart Butte area, Grant County	Peabody Coal, St Louis, MO	Gasification					Site and plans are unknown.	18,19

[e] Estimated, see appendix for explanation.

List of Data Sources for North Dakota

1. Jaeger, Jerry. Current Review of the Energy Status in North Dakota, Federal Energy Administration, Bismarck, N. Dak., March 1, 1976.

2. Woodward-Clyde Consultants. American Natural Gas Coal Gasification Plant Environmental Impact Report.

3. North Dakota State Planning Division. Some Tentative Figures on the Social Impact of Six Coal Conversion Plants in Dunn, Mercer, Oliver, and McLean Counties, North Dakota.

4. U.S. Bureau of Land Management. Environmental Analysis on the Falkirk mine (draft), January 1976.

5. Bismarck Tribune. June 24, 1975, and July 31, 1975.

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17. U.S. Bureau of Mines. Information Circular 8537.

18. U.S. Mining Enforcement and Safety Administration, District 9, Denver, Colo. Projected Mine Production Activity, October 17, 1975.

19. Energy Era. January 1976.

20. Federal Power Commission. Projected Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

21. Mermer, Noel F., Vice President. American Gas Service Company presentation at the lignite symposium, Grand Forks, N. Dak., May 14-15, 1975.

Oklahoma

Data on the Oklahoma projects listed below are presented in Tables 59 through 62. The map reference numbers correspond to the accompanying Oklahoma map.

Map ref. no.	Project name	Company or agency
Coal mines:		
U1	Garland Bokoshe No. 10	Garland Coal & Mining Co.
U2	Unnamed	CF&I Steel Corp.
U3	...do	Peabody Coal Co.
U4	...do	Armco Steel Corp.
U5	...do	Do.
U6	...do	Do.
U7	Choctaw	Kerr-McGee Corp.
Electric powerplants:		
E1	Riverside No. 2	Public Service Company of Oklahoma.
E2	Weleetka Nos. 5 and 6	Do.
E3	Muskogee Nos. 4 and 5	Oklahoma Gas & Electric Co.
-	Unsited, 2 units	Do.
E4	Anadarko No. 4	Western Farmers Electric Coop
E5	Ponca No. 2	Ponca City Municipal Water & Light.
E6	Sooner Nos. 1 and 2	Oklahoma Gas & Electric Co.
E7	Black Fox No. 1	Public Service Company of Oklahoma.
E8	Northeastern Nos. 3 and 4	Do.
-	Unsited, 2 units	Western Farmers Electric Coop.
-	...do	Public Service Company of Oklahoma.
-	CSR Joint	Do.
Oil refineries:		
R1	Cushing	Midland Cooperative, Inc.
Natural gas processing plants:		
R2	Mooreland	Amoco Production Co.
R3	Hitchcock	Do.
R4	Unnamed	Texas Oil & Gas Corp.

FIGURE 16. - Future fuels-related projects in Oklahoma.

TABLE 59. - Future coal mines in Oklahoma

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U1	Garland Bokoshe No.10 2 miles south of Bokoshe, LeFlore Co.	Garland Coal & Mining Co.	Strip and underground	0.25 - 1976	Foreign and domestic contracts		(Hartshorne)	130		[e]86	Old mine reopened. Will be converted to underground mine operated for CF&I Steel in 1978.	1, 2
U2	Unnamed southeast of Spiro, LeFlore Co.	CF&I Steel Corp., Pueblo, CO	Underground	Unknown	Coking coal		3-5 (Hartshorne)	700			Proposed. No plans finalized.	1, 2
U3	Unnamed Tahona, LeFlore Co.	Peabody Coal Company, St. Louis, MO	Underground	Unknown			(upper and lower Hartshorne)	1,000			Proposed. No plans finalized. Low volatile coal. Suggested joint-venture with a Japanese company.	1
U4	Unnamed near Savanna, Pittsburg Co.	Armco Steel Corp. Middletown, OH	Underground	Unknown			4 (McAlester)				Proposed. Possible joint-venture. High volatile, low-sulfur coal for coke blend, industrial, or steam.	1
U5	Unnamed near McCurtain, Haskell Co.	Armco Steel Corp., Middletown, OH	Underground	Unknown			(Hartshorne)				Proposed, no plans finalized. Low to medium volatile coking coal. Methane must be bled from gassy seams.	1
U6	Unnamed near Bokoshe, LeFlore Co.	Armco Steel Corp., Middletown, OH	Underground	Unknown			(Hartshorne)				Proposed, no plans finalized.	1

TABLE 59. - Future coal mines in Oklahoma--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U7	Choctaw 6 miles north west of McCurtain, Haskell Co.	Kerr-McGee Corp., Oklahoma City, OK	Underground				3 - 5 (Hartshorne)	1,300 - 1,400			Developed, bleeding methane. Start-up in 1977.	1, 2

e Estimated, see appendix for explanation.

TABLE 60. - Future Electric powerplants in Oklahoma

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Riverside No. 2, Jenks, Tulsa County	Public Service Co. of Oklahoma, Tulsa, OK	Gas/oil		450		Jan. 1976		e450	e56		3
E2	Weleetka Nos. 5, 6 Weleetka, Okfuskee County	Public Service Co. of Oklahoma, Tulsa, OK	Oil	5 6 Total	60 60 120	5 6	May 1976 May 1976	Total	e120	e15		3
E3	Muskogee Nos. 4, 5 Muskogee, Muskogee County	Oklahoma Gas & Electric Co., Oklahoma City, OK	Coal - e3.3 (total, both units)	4 5 Total	515 515 1,030	4 5	Feb. 1977 Feb. 1978	4 5	e515 e515	e64 e64	Coal will be supplied by ARCO's Black Thunder mine in Campbell County, WY.	3
--	Unsited Nos. 1, 2	Oklahoma Gas & Electric Co., Oklahoma City, OK	Gas/oil	1 2 Total	50 50 100	1 2	Feb. 1977 Feb. 1977	Total	e100	e13	Site snd plans unknown. Units reported to FPC as projected additions to company capacity.	3
E4	Anadsrko No. 4 Anadarko, Caddo County	Western Farmers Electric Coop., Anadarko, OK	Gas/oil		230		June 1977		e230	e29		3

TABLE 60. - Future electric powerplants in Oklahoma--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E5	Ponca No. 2 Ponca City, Kay County	Ponca City Municipal Water & Light Dept., Ponca City, OK	Gas/oil		41		July 1977		e41	e5		3
E6	Sooner Nos. 1, 2 South of Ponca City, Noble Co.	Oklahoma Gas & Electric Co., Oklahoma City, OK	Coal - e3.3 (total, both units)	1 2 Total	515 515 1,030	1 2	Feb. 1979 Feb. 1980	Total	e1,030	e129		3
E7	Black Fox No. 1 Inola, Rogers Co.	Public Service Co. of Oklahoma, Tulsa, OK	Nuclear		950		May 1983		e950	e119		3
E8	Northeastern Nos. 3, 4 Oolagah, Rogers Co.	Public Service Co. of Oklahoma, Tulsa, OK	Coal - e2.9 (total, both units)	1 2 Total	450 450 900	1 2	May 1979 May 1980	Total	e900	e112	Coal to be supplied by Kerr-McGee mines near Gillette, WY, and Public Service of Oklahoma mine near Sheridan, WY.	3
--	Unsited Nos. 1, 2	Western Farmers Electric Coop., Anadarko, OK	Gas/oil	1 2 Total	230 230 400	1 1	June 1980 June 1982	Total	e460	e58		3
--	Unsited Nos. 1, 2	Public Service Co. of Oklahoma, Tulsa, OK	Coal - e4.5 (total, both units)	1 2 Total	700 700 1,400	1 2	Feb. 1981 Feb. 1982	Total	e1,400	e175		3
--	CSR Joint	Public Service Co. of Oklahoma, Tulsa, OK	Coal - e0.8		240		May 1982		e240	e30		3

e Estimated, see appendix for explanation.

TABLE 61. - Future oil refineries in Oklahoma

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak employment		Remarks	Data source
					Construction	Operation		
R1	Cushing Refinery Cushing, Payne County	Midland Cooperative, Inc., Cushing, OK	1977	15,000 (expansion)			Currently constructing additional units to expand capacity from 20,000 barrels per day to 35,000 barrels per day.	4

TABLE 62. - Future natural gas processing plants in Oklahoma

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment		Remarks	Data source
					Construction	Operation		
R2	Mooreland Plant Mooreland, Woodward County	Amoco Production Company	Early 1976	183.6 (modification)			Modification.	5
R3	Hitchcock Plant Hitchcock, Blaine County	Amoco Production Company	Early 1976	6 (modification)			Modification, installation of cryogenic equipment.	5
R4	Unnamed near Woodward, Woodward County	Texas Oil & Gas Corp.		50			Will produce 35,000 gallons per day of ethane; 20,000 gallons per day of propane; 10,000 gallons per day of butane; and 9,000 gallons per day of other products.	6

List of Data Sources for Oklahoma

1. Oklahoma State Chief Mine Inspector, Norman, Okla.

2. Oklahoma State Geologocial Survey, Norman, Okla.

3. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

4. Tulsa Daily World. March 7, 1976.

5. Oil and Gas Journal. October 6, 1975.

6. Tulsa Daily World. March 2, 1976.

Oregon

Data on the Oregon projects listed below are presented in Tables 63 through 68. The map reference numbers correspond to the accompanying Oregon map.

Map ref no.	Project name	Company or agency
Electric powerplants:		
E1	Trojan	Portland General Electric Co.
E2	Weyco	Eugene Water & Electric Board
E3	Lost Creek Nos. 1 and 2	U.S. Army Corps of Engineers
E4	Beaver	Portland General Electric Co.
E5	Boardman Plant	Do.
E6	Pebble Springs Nos. 1 and 2	Do.
Waste-to-oil conversion plants:		
N1	Waste-to-oil Pilot Plant	ERDA
Potential geothermal facilities:		
G1	Klamath County areas	Various
G2,G3,G4	Malheur County areas	Do.
G5,G6,G7, G12.	Lake County areas	Do.
G8,G9	Harney County areas	Do.
G10	Union County areas	Do.
G11	Deschutes County areas	Do.
Uranium mines:		
M1	Fremont National Forest Exploration.	Exxon Company, USA
Oil refineries:		
R1	St. Helens	Charter Energy Co.
R2	Rainier	Cascade Energy, Inc.
Natural gas processing plants:		
R3	McLean Point	Northwest Natural Gas Co.

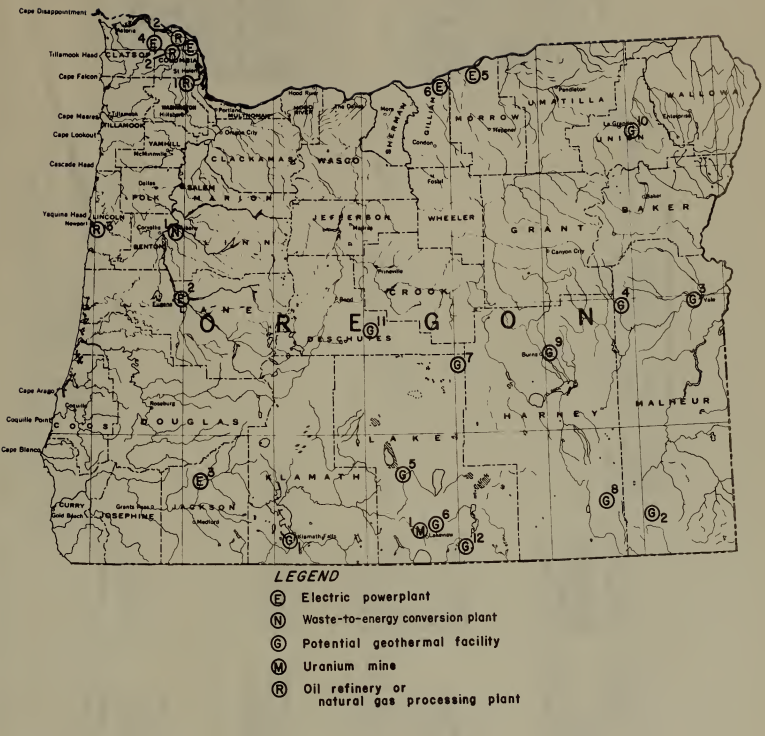

FIGURE 17. - Future fuels-related projects in Oregon.

TABLE 63. - Future electric power plants in Oregon

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E1	Trojan Rainier, Columbia County	Portland General Electric Company, Portland, OR	Nuclear		1,130		May 1976		1,000	100	Reactor core will contain 95 tons of enriched uranium valued at approximately $30 million. One-third of the core will be replaced annually.	1,12
E2	Weyco Springfield, Lane County	Eugene Water and Electric Board, Eugene, OR	Steam		53		Oct. 1976		[e]50	[e]7	Will use high-pressure steam from Weyerhaeuser's Springfield, Oregon Paper Mill.	2,12
E3	Lost Creek Nos. 1,2 Rogue River, near Shady Cove, Jackson County	U.S. Army Corps of Engineers, Portland District, Portland, OR	Hydropower	1 2 Total	28 28 56	1 2	Oct. 1976 Nov. 1976	Total	400	20		3,12
E4	Beaver (combined cycle addition) Clatskanie, Columbia County	Portland General Electric Co., Portland, OR	Fuel oil		150		Nov. 1977		100	6	Under construction. In August 1974 Pacific Gas and Electric's Beaver plant became operational. The plant consists of 6 industrial-type combustion turbine units with total capacity of 439 MW. Plant will be converted to combined cycle operation with increased peaking capability of 150 MW.	4,5,6

TABLE 63. - Future electric powerplants in Oregon--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Megawatts	Unit no.	Month and year	Unit no.	Construction	Operation		
E5	Boardman Plant 12 miles SW of Boardman, Morrow County	Portland General Electric Company, Portland, OR	Coal-e1.6		500		July 1980		700	60	Site preparation for the $300 million generating plant will begin in early 1976. Condenser cooling would be by means of an artificial lake using water pumped from the Columbia River. Site has potential for another coal-fired unit and several nuclear units. Company has filed applications with State and Federal Agencies for the necessary permits and licenses for the Carty Coal powerplant. Proposed pipeline to deliver coal to plant from Eastern Wyoming.	2,6
E6	Pebble Springs Nos. 1 & 2 3 miles SE of Arlington, Gilliam County	Portland General Electric Company, Operator, Portland, OR	Nuclear	1 2 Total	1,260 1,260 2,520	1 2	July 1985 July 1986	1 2	1,200 1,200	100 100	Unit #1 delayed by legal challenge. Site certificate for both units filed with state thermal siting agency in 1972. Cost for each unit expected to be $1 billion. Condenser cooling by means of man-made cooling lake utilizing water pumped from Columbia River.	4

e Estimated, see appendix for explanation.

TABLE 64. - Future waste-to-fuel conversion plants in Oregon

Map ref. no.	Plant name and location	Operating company	Type and feedstock	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
N1	ERDA pilot plant Albany, Linn County	Energy Research & Development Administration	Waste to oil	Sep. 1976	Three tons of wood chips per day to produce 252 gallons per day of high Btu heating oil	15	25	The pilot plant will investigate the feasibility of converting wood waste, bovine manure, and urban garbage to low-sulfur heating oil. The initial operation will use wood chips, and it is hoped to produce 6 bbls. of high Btu heating oil (15,000 Btu/lb) from 3 tons per day of chips. The chips will be fried to a moisture content of 4 percent and then ground into flour. The feeding of cellulosic materials into high-pressure reactors has presented a major difficulty in the laboratory. This plant will feature three distinct systems to feed the reactor: flour-oil slurry feed, pretreated wood-oil slurry feed, and solids feed via lockhoppers. The slurry feed systems involve mixing dried wood flour or pulverized, partially carbonized wood with some of the oil derived from the liquefaction process to form a heavy paste containing 30 to 50 weight-percent solids. This paste will be fed to the reactor by high-pressure pumps. In the solids feed system, dried wood flour will be metered from high-pressure lock-hoppers directly into the reactor, which will contain process-derived oil. In this way the concentration of solids can be controlled at any desired level. Sodium carbonate solution, a catalyst to facilitate the conversion to oil, and carbon monoxide will be metered to the reactor continuously. The products from the reactor will be continuously withdrawn into a gas-liquid separation system. The gases will be burned in a flare, and the liquid will be centrifuged to remove any unreacted wood solids from the product oil. The plant was designed by Rust Engineering Co. of Birmingham, Ala., and will be constructed by MAECON, Inc., of Santa Fe Springs, Calif., at a cost of about $3.6 million.	7

TABLE 65. - Potential geothermal facilities in Oregon

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
			An estimated 354,000 acres of geothermal leases were active in Oregon at the close of 1975 including 106,000 acres of Federal land, 8,000 acres of State land, and an estimated 240,000 of private land. An additional 900,000 acres applied for on Federal land are pending environmental assessment. More than 30 companies are involved in the Oregon activity. The following lists permits and leases that may result in geothermal energy production in the future. All geothermal activity has been suspended until federal courts decide whether geothermal resources are mineral or water resources. Decision could have a far reaching influence on the future of geothermal developments on federal lands.	8
	Active State Permits for Deep Geothermal Wells			
G1	Meadow Lake area, Klamath County	Gulf Mineral Resources	Permit issued 9/7/73 and is still valid. No drilling done to date.	8
G1	Klamath County	Weyerhaeuser and Pacific Power & Light	Permit issued 10/28/75. Hole drilled to 250 ft., 7-inch casing set at 250 ft; projected depth, 2,000 ft.	8
			There have been 6 other state deep well permits issued, but they have either been cancelled or the drilling has been abandoned.	8
	Active State Permits for Shallow Prospect Wells			
G1	Klamath Falls, Klamath County	Thermal Power Company U.S. Geological Survey	2 permits issued 11/72 and 8/75. Issued 8/74.	8
G2	Blue Mountain, Malheur County	U.S. Geological Survey	Issued 5/74.	8
G3	Vale area, Malheur County	Union Oil Company AMAX Exploration Co., Inc. Oregon Dept. of Geology and Mineral Industries	Issued 11/74. Issued 2/75. Issued 4/75.	8
G4	Beulah Reservoir, Malheur County	AMAX Exploration Co., Inc.	Issued 2/75.	8
G5	Paisley, Lake County	AMAX Exploration Co., Inc.	Issued 3/75.	8

TABLE 65. - Potential geothermal facilities in Oregon—Continued

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G6	Warner Valley, Lake County	Gulf Research & Development Co.	Issued 7/74.	8
G7	Glass Butte, Lake County	Phillips Petroleum Co.	Issued 12/75.	8
G8	Alvord Desert, Harney County	Anadarko Oil Company Phillips Petroleum Union Oil Company Al Aquitane	Issued 1/75. Issued 3/75. Issued 9/75. Issued 11/75.	8
G9	Burns, Harney County	AMAX Exploration Co., Inc. Oregon Dept. of Geology & Mineral Industries	Issued 3/75. Issued 7/75.	8
G10	LaGrande, Union County	AMAX Exploration Co., Inc.	Issued 2/75.	8
G11	Newberry Crater, Deschutes County	Phillips Petroleum	Issued 8/75.	8
	Permits for Geothermal Exploration on Federal Lands			
G6	Lakeview Basin, Lake County	Chevron Oil Co.	Issued 4/75.	8
G1	Klamath Falls, Klamath County	Hunt Oil Company Southern Union Production Company	Issued 8/75. Issued 11/75.	8

TABLE 65. - Potential geothermal facilities in Oregon--Continued

Map ref. no.	Location	Company	Current status, plans, and other relevant information	source
	Permits for Geothermal Exploration on Federal Lands--Continued			
G6	Warner Valley, Lake County	Southern Union Production Company	Issued 10/75.	8
G8	Alvord Valley, Harney County	Southern Union Production Company	Issued 10/75.	8
	Federal Geothermal Lease Sales			
G3	Vale, Malheur County	Republic Geothermal	Sold 6/74. 1 tract, 1,347 acres.	8
G8	Alvord Area, Harney County	Al Aquitane	Sold 5/75. 3 tracts, 7,520 acres.	8
		Republic Geothermal	Sold 5/75. 5 tracts, 15,000 acres.	
		Chevron Oil	Sold 5/75. 1 tract, 2,560 acres.	
		Mapco, Inc.	Sold 6/75. 3 tracts, 6,333 acres.	
		Getty Oil Co.	Sold 6/75. 1 tract, 2,126 acres.	
		Southern Union Production Company	Sold 6/75. 1 tract, 2,560 acres.	
G12	Crump Geyser, Lake County	Cheveon Oil Co.	Sold 7/75. 4 tracts, 9,462 acres.	8
G3	Vale, Malheur County	Union Oil Co.	Sold 9/75. 2 tracts, 4,486 acres.	8
		Geothermal Resources	Sold 9/75. 1 tract, 2, 560 acres.	

TABLE 66. - Future uranium mines in Oregon

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity and year	Employment Present	Employment Maximum	Remarks	Data source
M1	Area Exploration, Fremont National Forest, Lake County, (T 38 S, R 18 E)	Exxon Co., Houston, Texas	(in exploration stage)				Exxon Co. has obtained permission from the Federal Government to explore for uranium in the Fremont National Forest in an area that surrounds a privately owned parcel of 240 acres on which the State holds mineral rights. The State Land Board has agreed to allow the company to explore the privately owned parcel for uranium. Environmental impact statements will be required on both the Federal land and the privately owned parcel should Exxon find uranium and decide to mine it.	9

TABLE 67. - Future oil refineries in Oregon

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak Employment Construction	Peak Employment Operation	Remarks	Data source
R1	St. Helens, Columbia County	Charter Energy Co., St. Helens, OR	1978	56,000			Charter Energy Co. was issued an air-discharge permit in April 1975 by the Oregon Environmental Quality Commission (EQC). It has not received approval from EPA.	10
R2	Rainier, Columbia County	Cascade Energy, Inc., Portland, OR	1978	30,000			Construction is scheduled to start late in the fall of 1976. Construction time is estimated to be about 1¼ years. Cost is estimated at $50 million.	10

TABLE 68. - Future natural gas processing plants in Oregon

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment		Remarks	Data source
					Construc-tion	Opera-tion		
R3	LNG Plant: McLean Point, New port, Lincoln County	Northwest Natural Gas Company	June 1977	Can be used as a peaking facility. Capacity 1 billion standard cu. ft. storage. Liquify on site 5 million cu. ft. per day.	50	5	In May 1974, Northwest Natural Gas Co. signed contracts to obtain LNG from Alaska from Phillips Petroleum Co., and Marathon Oil Co. The importation of the LNG was expected to increase the company's gas supply in Oregon by about 15%. Construction of the plant for handling the LNG was started at the port of Newport. However, importations from Alaska are now in jeopardy. The fate of the $14 million facility hinges upon future rulings by the FPC. The FPC has imposed restrictions on Northwest Natural Gas (the consumer) and on Phillips Oil Co., and Marathon Petroleum Co., (producers of the gas in Alaska), which have made it difficult for both to comply. One manner of surmounting the barriers imposed by FPC is to sell the gas to a State agency, which could then sell it to the gas company.	11

List of Data Sources for Oregon

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3. U.S. Army Corps of Engineers. Portland District, Portland, Oreg.

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8. Hull, D. A., and F. C. Newton, Jr. Geothermal Activity in 1975. The Ore Bin, v. 38, No. 1, Oregon Department of Geology and Mineral Industries,, Portland, Oreg., January 1976.

9. Oregon State Land Board. Monthly hearing record, February 1975.

10. Oregon Environmental Quality Commission, Salem, Oreg.

11. U.S. Bureau of Mines State Liaison Office, Salem, Oreg.

12. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

South Dakota

Data on the South Dakota projects listed below are presented in Tables 69 through 71. The map reference numbers correspond to the accompanying South Dakota map.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E1	Big Stone No. 2	Otter Tail Power Co.
E2	Mitchell No. 4	Northwestern Public Service Co.
E3	Unnamed	Do.
E4	...do	Do.
E5	...do	Missouri Basin Municipal Power Agency.
E6	Basin	East River Electric Power Coop.
E7	Heartland	Heartland Consumer Power District
E8	Sioux Falls	Northern States Power Co.
Coal conversion plants:		
C1	Lignite Pilot	Conoco Coal Development Co.
C2	NSP Demonstration	Northern States Power Co.
Natural gas processing plants:		
R1	Unnamed LNG Plant	Northwestern Public Service Co.

FIGURE 18. - Future fuels-related projects in South Dakota.

TABLE 69. - Future electric powerplants in South Dakota

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Megawatts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Big Stone No. 2 Big Stone City, Grant County	Otter Tail Power Company, Fergus Falls, MN	Lignite-2.5		440		1981		400	55	Addition to existing 440 MW unit. Possible coal supply from Knife River Coal Mining Co. in North Dakota.	1,2,3
E2	Mitchell No. 4 Mitchell, Davison County	Northwestern Public Service Company, Huron, SD	Natural Gas		22.5		May 1979		e25	e3	According to State Energy Office the likelihood of this facility is now uncertain due to tight supply of natural gas. Plant would most likely be used for peaking purposes.	1,2,3
E3	Unnamed near Salem, McCook County	Northwestern Public Service Company, Huron, SD	Natural Gas		22.5		1981		e25	e3	According to State Energy Office the likelihood of this facility is uncertain due to tight supply of natural gas. Plant would most likely be used for peaking purposes.	1,2,3
E4	Unnamed Huron, Beadle County	Northwestern Public Service Company, Huron, SD	Natural Gas		22.5		1978		e25	e3	Originally considered for study near Aberdeen, SD. That location has been scrubbed and the site area at Huron, SD is being studied. According to the State Energy Office the likelihood of this facility is uncertain due to the tight supply of natural gas. Plant would most likely be used for peaking purposes.	1,2,3

TABLE 69. - Future electric powerplants in South Dakota--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E5	Unnamed Fairfax-Bonesteel area, Gregory County	Missouri Basin Municipal Power Agency, Sioux Falls, SD	Coal-e0.8		250		unknown		e250	e30	Plant will consume Wyoming coal. Project is in very early study stages and according to the State Energy Office, the project should be considered only a remote possibility at this time. Construction of a railroad spur line from the CNW main line at Atkinson, NE, to the plant site is planned.	2,3
E6	Basin Probable location in Brule County on Missouri River	East River Electric Power Coop., Madison, SD	Coal-e0.5		150		1980		e150	e19	Originally planned to use fuel oil but FEA would probably not give allocation to a new powerplant. East River Electric Cooperative currently obtains 55 percent of its power supply from the U.S. Bureau of Reclamation and 45 percent from Basin Electric Power Cooperative. Basin Electric and five other power groups are planning to construct a large coal-fired plant near Wheatland, WY. The outcome of this litigation will play a large role in determining if this plant is constructed to meet East River Cooperative's future electric requirements.	2,3

TABLE 69. - Future electric powerplants in South Dakota--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E7	Heartland Southeastern South Dakota on Missouri River	Heartland Consumer Power District, Madison, SD	Coal-e0.6		200		1979		e200	e25	Exact location is unknown. The site is expected to be in the southeastern part of the State along the Missouri River, as tentative plans call for use of flow through water from the river. Expected coal source is Wyoming. The company is part of a consortium seeking authority to construct the powerplant at Wheatland, WY. The outcome of this litigation will affect construction plans for the Heartland facility. Hence, the proposed project should be considered tentative at this time.	2,3
E8	Sioux Falls 10 miles northeast of Sioux Falls, Minnehaha County	Northern States Power Company, Minneapolis, MN	Coal-e0.6		200		1978		e200	e25	Project is still in the early planning stages and should be considered tentative at this time.	2,3

e Estimated, see appendix for explanation.

TABLE 70. - Future coal conversion plants in South Dakota

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
C1	Lignite Gasification Pilot Plant 2 miles south of Rapid City, Pennington County	Conoco Coal Development Company, Rapid City, SD	Gasification-CO_2 Acceptor Process	completed 1972	2 million cubic feet per day		120	Operating sponsors include Office of Coal Research and the American Gas Association. The plant will operate through 1977. There are no plans for operation beyond that date. Conoco officials proposed last year that funding be continued to provide for experiments in the production of "low-Btu" gas (375 Btu per cubic foot). The proposal was made originally to the U.S. Office of Coal Research which has since been absorbed by the U.S. Energy Research and Development Administration. ERDA has recently approved funding through June 30, 1976.	4,11
C2	NSP Demonstration Plant, 6 miles northeast of Sioux Falls, Minnehaha County	A joint venture of Northern States Power Company, Minneapolis, MN; Foster Wheeler Energy Corporation, Livingston, NJ; and ERDA	Gasification - low-Btu gas to be used as fuel for electrical generation	1979	Net generating capacity of the pilot facility is estimated at 36 MW after the combined cycle is added			The low-Btu gas will initially be used in the Lawrence powerplant boilers. In the future the gas will be used to fuel a turbine to produce electricity in a combined-cycle process. The project is being delayed because of a disagreement between ERDA and the company over the value of the site and the Lawrence Plant that the company will provide for the project. Total cost of the project is estimated at $80-$90 million.	5,6,7, 8,9

TABLE 71. - Future natural gas processing plants in South Dakota

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment		Remarks	Data source
					Construction	Operation		
R1	Liquefied Natural Gas Plant Aberdeen, Brown County	Northwestern Public Service Company, Huron, SD	1977	Equivalent storage of 400 million cubic feet of natural gas			Plant cost is estimated between $6 million and $6.5 million. Plant would liquefy pipeline natural gas at 260 degrees below zero and store it for subsequent use during peak winter demand periods.	2,6,10

List of Data Sources for South Dakota

1. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

2. Federal Energy Administration, State Liaison Office, Pierre, S. Dak.

3. South Dakota State Energy Office, Pierre, S. Dak.

4. Rapid City Journal. February 22, 1976.

5. Minneapolis Tribune. January 31, 1976.

6. Sioux Falls Argus-Leader. July 26, 1975.

7. Sioux Falls Argus-Leader. December 18, 1975.

8. Sioux Falls Argus-Leader. January 31, 1976.

9. Sioux Falls Argus-Leader. February 10, 1976.

10. Rapid City Journal. August 20, 1975.

11. Coal News. March 12, 1976.

Texas

Data on the Texas projects listed below are presented in Tables 72 through 77. The map reference numbers correspond to the accompanying Texas map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S1	Monticello	Texas Utilities Generating Co.
S2	Martin Lake	Do.
S3	Forest Grove	Do.
S4	Twin Oaks	Do.
S5	Unnamed	Texas Municipal Power Pool
S6	San Miguel	Do.
Electric powerplants:		
E 1	Barney M. Davis No. 2	Central Power & Light Co.
E 2	Martin Lake Nos. 1-4	Texas Utilities Generating Co.
E 3	Si Ray No. 9	City of Brownsville
E 4	Greens Bayou Nos. 1-6	Houston Lighting & Power Co.
E 5	Unit 13	City of Robstown
E 6	J. T. Deely Nos. 1 and 2	San Antonio Public Service Board.
E 7	R. C. Dansby No. 1	City of Bryan
E 8	Decker No. 2	City of Austin Electric Dept.
E 9	Greenville No. 3	City of Greenville
E10	Phantom No. 2	West Texas Utilities Co.
E11	Handley No. 5	Texas Electric Service Co.
E12	Monticello No. 3	Texas Utilities Generating Co.
E13	W. A. Parish Nos. 5 and 6	Houston Lighting & Power Co.
-	Unsited, 3 units	Texas Municipal Power Pool
E14	Fayette Nos. 1 and 2	Lower Colorado River Authority
E15	Texas Coop. Nos. 1 and 2	Texas Municipal Power Pool
E16	Coleto Creek Nos. 1 and 2	Central Power & Light Co.
E17	Comanche Peak Nos. 1 and 2	Texas Utilities Generating Co.
-	Unsited, 2 units	West Texas Utilities Co.
E18	South Texas Project Nos. 1 and 2.	Houston Lighting & Power Co.
E19	Forest Grove No. 1	Texas Power & Light Co.
E20	Twin Oaks Nos. 1 and 2	Do.
-	Unsited, 3 units	Lower Colorado River Authority
-	Unsited, 4 units	Texas Power & Light Co.
E21	Blue Hills Nos. 1 and 2	Gulf States Utilities
E22	Holly Avenue No. 2	City of Lubbock
E23	Harrington Nos. 1 and 2	Southwestern Public Service Co.
E24	Welsh Nos. 1-3	Southwestern Electric Power Co.
E25	Sabine No. 5	Gulf States Utilities
E26	El Paso Plant	El Paso Electric Co.

Map ref. no.	Project name	Company or agency
Coal conversion plants:		
C1	Unnamed Pilot	Texas Utilities Service Co.
Uranium mines:		
M 1	Thomas	Conoco-Pioneer
M 2	Fort Worth National	Do.
M 3	Rosenbrock	Do.
M 4	Hurt	Do.
M 5	House	Do.
M 6	Lamprecht	Westinghouse Corp.
M 7	Burns	Dalco-U.S. Steel Corp.
M 8	Clay West	Atlantic Richfield Co.
M 9	Palangana	Union Carbide Corp.
M10	Bruni	Westinghouse Corp.
M11	O'Hern	Mobil Oil Corp.
Oil refineries:		
R1	Houston	Atlantic Richfield Co.
R2	Baytown	Exxon Company, USA
R3	Unnamed	Hudson Oil Corp.
R4	...do	Dow Chemical Co.
R5	...do	Gulf Energy Refining
R6	Three Rivers	Sigmor Corp.
R7	Unnamed	J & W Refining Co.
Natural gas processing plants:		
R 8	Hemphill County plant	Mobil Oil Corp.
R 9	Andrews County plant	Amoco Production Co.
R10	Ector County plant	Phillips Petroleum Co.
R11	Karnes County plant	General Crude Oil Co.
R12	Matagorda County plant	Exxon Compnay, USA
R13	Brazoria County plant	Do.

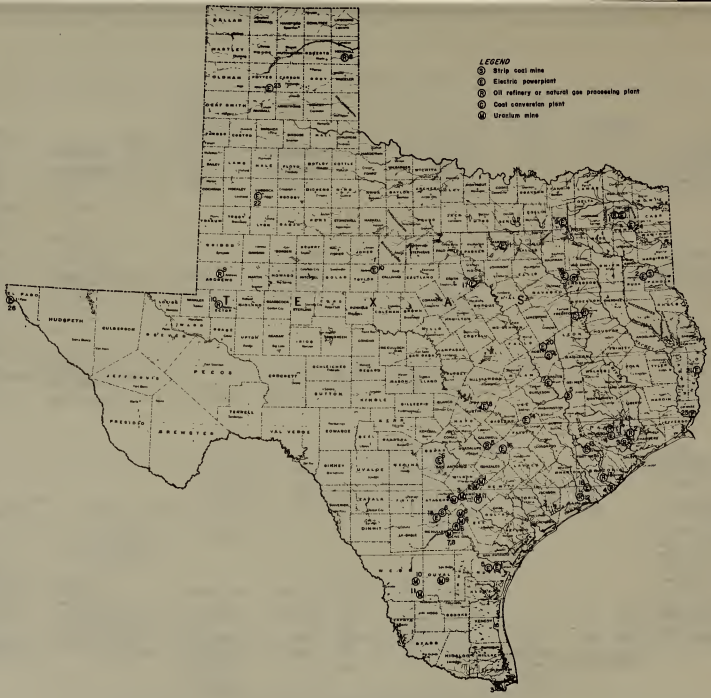

FIGURE 19. - Future fuels-related projects in Texas.

TABLE 72. - Future coal mines in Texas

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	Monticello 4 miles west of Mt. Pleasant, Titus County	Texas Utilities Generating Co., Dallas, TX	Strip	8.0-10.0-1978 (expansion)	mine-mouth Monticello powerplant	Moist. - 33.4% Ash - 12.4% Sulfur - 0.6% Btu/lb - 6,820	4 - 11 (Wilcox lignite)			e660	Analytical information is taken from one core sample. An average of 5 samples taken from the mine area and other locations in the county reportedly shows moisture, 32.7%; ash, 8.6%; Btu, 6,983/lb; sulfur, 0.87% (as received). Mine opened in 1974. Planned production is estimated.	1
S2	Martin Lake 4 miles southeast of Tatum, Panola Co.	Texas Utilities Generating Co., Dallas, TX	Strip	12.0-16.0-1980	mine-mouth Martin Lake powerplant	Moist. - 32.8% Ash - 8.3% Btu/lb - 7,379 Sulfur - 0.86%	5 - 15 (Wilcox lignite)			e925	Start-up in 1976. Analytical information from one core sample taken from mine area. Planned production is estimated.	1
S3	Forest Grove 6 miles northwest of Athens, Henderson Co.	Texas Utilities Generating Co., Dallas, TX	Strip	3.0-4.0-1982	mine-mouth Forest Grove powerplant		7 - 12 (Wilcox lignite)		0	e265	Start-up in 1980. Planned production is estimated.	1
S4	Twin Oaks 10 miles north of Franklin, Robertson Co.	Texas Utilities Generating Co., Dallas, TX	Strip	6.0-8.0-1982	mine-mouth Twin Oaks powerplant		3 - 12 (Wilcox lignite)		0	e530	Start-up in 1980. Planned production is estimated.	1

TABLE 72. - Future coal mines in Texas--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S5	Unnamed 20 miles southeast of Bryan, Brazos and Grimes Counties	Texas Municipal Power Pool, Waco, TX	Strip	3.0-5.0-1983	mine-mouth powerplant		3 - 10 Yegua-Manning lignites		0	e330	Start-up in 1981. Planned production is estimated.	1
S6	San Miguel 15 miles south of Jordantown, Atascosa and McMullen Counties	Texas Municipal Power Pool, Waco, TX and others	Strip	3.0-5.0-1982	mine-mouth powerplant		2 - 8 Yegua-Jackson lignites		0	e330	Start-up in 1979. Planned production is estimated.	1

e Estimated, see appendix for explanation.

TABLE 73. - Future electric powerplants in Texas

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Barney M. Davis No. 2 Corpus Christi, Nueces County	Central Power & Light Company, Corpus Christi, TX	Gas/oil		325		May 1976		e325	41		2,3
E2	Martin Lake Nos. 1-4 near Tatum, Rusk County	Texas Utilities Generating Co., Dallas, TX	Lignite-12.0-16.0 (total, all units)	1 2 3 4 Total	750 750 750 750 3,000	1 2 3 4	Dec. 1976 Dec. 1977 Dec. 1978 Dec. 1979	Total	e3,000	e375	Mine-mouth powerplant. Coal supplied by developing Martin Lake Mine.	2,3
E3	Si Ray No. 9 Brownsville, Cameron County	City of Brownsville, Brownsville, TX	Gas/oil		40		1977		e40	e5		2,3

TABLE 73. - Future electric powerplants in Texas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E4	Greens Bayou Nos. 1-6 Houston, Harris County	Houston Lighting & Power Company, Houston TX	Gas/oil	360 total (6 units)			Jan. 1977		e360	e45		2,3
E5	Unit No. 13 Robstown, Nueces County	City of Robstown, Robstown, TX	Gas/oil		6		June 1976					2,3
E6	J. T. Deely Nos. 1 & 2 San Antonio, Bexar County	San Antonio Public Service Board, San Antonio, TX	Coal-e2.9 (total, both units)	1	447	1	Feb. 1977	Total	e900	e110	Sunoco Belle Fourche Mine in Campbell County, Wyoming is possible coal source.	2,3,4
				2	447	2	July 1977					
				Total	894							
E7	R. C. Dansby No. 1 Bryan, Brazos County	City of Bryan, Bryan, TX	Gas/oil		105		Mar. 1977		e105	e13		2,3
E8	Decker No. 2 Austin, Travis County	City of Austin Electric Dept., Austin, TX	Gas/oil		405		June 1977		e405	e51		2,3
E9	Greenville No. 3 Greenville, Hunt County	City of Greenville, Greenville, TX	Gas/oil		42		June 1977		e42	e5		2,3
E10	Phantom No. 2 Abilene, Taylor County	West Texas Utilities Company, Abilene, TX	Gas/oil		207		June 1977		e205	e26		2,3
E11	Handley No. 5 Fort Worth, Tarrant County	Texas Electric Service Company, Ft. Worth, TX	Gas/oil		455		Oct. 1977		e455	e57		2,3

TABLE 73. - Future electric powerplants in Texas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E12	Monticello No. 3 near Mt. Pleasant, Titus County	Texas Utilities Generating Co., Dallas, TX	Lignite-e3.2		750		Dec. 1977		e750	e94	3rd unit of mine-mouth complex. Total coal consumption for all 3 units will range from 8.0-10.0 million tons per year. Coal supplied by Monticello mine, Titus County.	2,3
E13	W. A. Parish Nos. 5 & 6 Richmond, Ft. Bend County	Houston Lighting & Power Company, Houston, TX	Coal-4.7 (total, both units)	5 6 Total	734 734 1,468	5 6	Mar. 1978 Mar. 1979		e1,468	e184		2,3
--	Unsited Nos. 1-3	Texas Municipal Power Pool, Waco, TX	No. 1-Gas/oil No. 2-Lignite e1.3 No. 3-Lignite e1.8	1 2 3 Total	80 400 550 1,030	1 2 3	May 1978 June 1982 June 1983	1 2 3	e80 e400 e550	e10 e50 e65	Locations and plans are not determined at this time. Units are reported to FPC as projected additions to generating capacity. Units will not necessarily be located at same site.	2,3
E14	Fayette Nos. 1 & 2 northern Fayette County	Lower Colorado River Authority, and City of Austin, TX	Coal-2.0 (total, unit 1)	1 2 Total	550 550 1,100	1 2	Mar. 1979 Oct. 1980	Total	e1,100	e138	Coal for Unit 1 will be supplied by Decker Coal Company mine in Montana. Unit 2 coal supplier is not determined at present.	2,3
E15	Texas Coop. Nos. 1 & 2 northern McMullan County	Texas Municipal Power Pool, Waco, TX	Lignite-3.0-5.0 (total, both units)	1 2 Total	400 400 800	1 2	June 1979 June 1981	1 2	e400 e400	e50 e500	Mine-mouth complex. Coal supply from developing San Miguel strip mine.	2,3
E16	Coleto Creek Nos. 1 & 2 northern Gonzales County	Central Power & Light Company, Corpus Christi, TX	Coal-e3.5 (total, both units)	1 2 Total	550 550 1,100	1 2	Dec. 1979 Dec. 1986	1 2	e550 e550	e69 e69	Coal supplier is undetermined at present.	2,3

TABLE 73. - Future electric powerplants in Texas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E17	Comanche Peak Nos. 1 & 2 Glen Rose, Somervell County	Texas Utilities Generating Co., Dallas, TX	Nuclear	1 2 Total	1,150 1,150 2,300	1 2	Jan. 1980 Jan. 1982	1 2	e1,150 e1,150	e144 e144		2,3
--	Unsited Nos. 1 & 2	West Texas Utilities Company, Abilene, TX	Undetermined	1 2 Total	200 250 550	1 2	June 1980 June 1983	1 2	e200 e250	e25 e31	Location and plans not determined at this time. Units are reported to FPC as projected additions to generating capacity. Units will not necessarily be located at same site.	2,3
E18	South Texas Project Nos. 1 & 2 Northeast Matagorda County	Houston Lighting & Power Company, Houston, TX	Nuclear	1 2 Total	1,200 1,200 2,400	1 2	Oct. 1980 Mar. 1982	1 2	e1,200 e1,200	e150 e150		2,3
E19	Forest Grove No. 1 eastern Henderson County	Texas Power & Light Company, Dallas, TX	Lignite-3.0-5.0		750		Dec. 1980		e750	e94	Mine-mouth powerplant. Coal supplied by proposed Forest Grove mine.	2,3
E20	Twin Oaks Nos. 1 & 2	Texas Power & Light Company, Dallas, TX	Lignite-6.0-8.0 (total, both units)	1 2 Total	750 750 1,500	1 2	Jan. 1981 Jan. 1982	Total	e1,500	e185	Supplied by proposed Twin Oaks mine.	2,3
--	Unsited, 3 units	Lower Colorado River Authority	Undetermined	1 2 3	60 60 200	1 2 3	Oct. 1981 Oct. 1982 Oct. 1984	1 2 3	e60 e60 e200	e8 e8 e8	Locations and plans not as yet determined. Units are reported to FPC as additions to generating capacity. Units will not necessarily be located at same site.	2,3

TABLE 73. - Future electric powerplants in Texas--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
--	Unsited, Nos. 1-4	Texas Power & Light Company, Dallas, TX	Lignite-[e]10.0 (total, all units)	1	750	1	Jan. 1983		[e]3,000	[e]375	Employment estimates represent total for all units. Location not as yet determined.	2,3
				2	750	2	Jan. 1983					
				3	750	3	Jan. 1984					
				4	750	4	Jan. 1984					
				Total	3,000							
E21	Blue Hills Nos. 1 & 2 Newton County	Gulf States Utilities, Beaumont, TX	Nuclear	1	998	1	Sep. 1985	1	[e]1,000	[e]125		2,3
				2	998	2	Sep. 1987	2	[e]1,000	[e]125		
				Total	1,996							
E22	Holly Ave. No. 2 Lubbock, Lubbock County	City of Lubbock, Lubbock, TX	Gas/oil		50		July 1978		[e]50	[e]6		2,3
E23	Harrington Nos. 1 & 2 near Amarillo, Potter County	Southwestern Public Service Company, Amarillo, TX	Coal-[e]2.0 (total, both units)	1	360	1	June 1976	1	[e]360	[e]45	Coal supply from ARCO Black Thunder mine, Campbell County, WY.	2,3,4
				2	360	2	June 1978	2	[e]360	[e]45		
				Total	720							
E24	Welsh Nos. 1-3 near Cason, Morris County	Southwestern Electric Power Company, Shreveport, LA	Coal-[e]3.5 (total, all units)	1	528	1	Feb. 1977	1	[e]530	[e]65	Coal supply from AMAX Belle Ayr mine, Campbell County, WY.	2,3,4
				2	528	2	Feb. 1980	2	[e]530	[e]65		
				3	528	3	Feb. 1982	3	[e]530	[e]65		
				Total	1,584							
E25	Sabine No. 5 Bridge City, Orange County	Gulf States Utilities, Beaumont, TX	Gas/oil		480		June 1978		[e]480	[e]60		2,3
E26	El Paso Plant El Paso, El Paso County	El Paso Electric Company, El Paso, TX	Undetermined		70		June 1979		[e]70	[e]9		2,3

[e] Estimated, see appendix for explanation.

TABLE 74. - Future coal conversion plants in Texas

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak Employment: Construction	Peak Employment: Operation	Remarks	Data source
C1	Unnamed Pilot Project (Tentative site in Freestone County but may be located in another area of East Texas)	Texas Utilities Service Company, Dallas, TX	in situ gasification	Late 1976	not available			This pilot project will employ Soviet in situ gasification technology. Company has purchased rights to be the sole-licensing agent in the U.S. for this lignite gasification process. Gas produced will be used for power generation.	1

TABLE 75. - Future uranium mines in Texas

Map ref. no.	Mine name and location	Operator	Mine type	Planned capacity and year	Employment: Present	Employment: Maximum	Remarks	Data source
M1	Thomas Mine 19 miles northeast of Karnes City, Karnes County	Conoco-Pioneer, Falls City, TX	open pit	see remarks			Ore production from the five Conoco-Pioneer mines listed will begin in 1976 or 1977. Development stripping operations are now underway at several locations. Production from all 5 mines limited by mill capacity of 1,750 tons of ore per day and the blending requirements for the feedstock.	1
M2	Fort Worth National Mine 7 miles northwest of Karnes City, Karnes County	Conoco-Pioneer, Falls City, TX	open pit	See Thomas Mine remarks				1
M3	Rosenbrock Mine 11 miles west of Karnes City, Karnes County	Conoco-Pioneer, Falls City, TX	open pit	See Thomas Mine remarks				1
M4	Hurt Mine 20 miles southeast of Jourdanton, Atascosa County	Conoco-Pioneer, Falls City, TX	open pit	See Thomas Mine remarks				1
M5	House Mine 20 miles north of George West, Live Oaks County	Conoco-Pioneer, Falls City, TX	open pit	See Thomas Mine remarks				1

TABLE 75. - Future uranium mines in Texas--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned capacity and year	Employment		Remarks	Data source
					Present	Maximum		
M6	Lamprecht Mine 12 miles north of George West, Live Oak County	Westinghouse Corp., Lakewood, CO	in situ solution				Current status, pilot test. Probable expansion to commercial scale in 1976 or 1977.	1
M7	Burns Mine 7 miles southwest of George West, Live Oak County	Dalco-U.S. Steel Corp., Dallas, TX	in situ solution				Pilot test. Niagra-Mohawk and a Swiss Company are negotiating a purchase of the operation.	1,5
M8	Clay West Mine 8 miles southwest of George West, Live Oak County	Atlantic Richfield Co., Los Angeles, CA	in situ solution	250,000 lb. of U_3O_8 per year			Commercial scale operation with possible expansion in 1976 or 1977.	1
M9	Palangana Mine 11 miles southwest of San Diego, Duval County	Union Carbide Corp., New York, NY	in situ solution				Pilot test. Possible expansion to commercial scale in 1976 or 1977.	1
M10	Bruni Mine 39 miles east of Laredo, Webb County	Westinghouse Corporation, Lakewood, CO	in situ solution				Expansion to commercial scale underway.	1
M11	O'Hern Mine 43 miles east of Laredo, Webb County	Mobil Oil Corp., Denver, CO	in situ solution				Pilot test with possible expansion to commercial scale in 1977 or 1978.	1

TABLE 76. - Future oil refineries in Texas

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak Employment		Remarks	Data source
					Construc-tion	Opera-tion		
R1	Houston Refinery Houston, Harris County	Atlantic Rich-field Company, Los Angeles, CA	1976	93,000 (expansion)			Expansion. Total capacity 335,500 barrels per day.	6
R2	Baytown Refinery Baytown, Harris County	Exxon Co., USA, Houston, TX	1977	250,000 (expansion)			Expansion. Total capacity 650,000 barrels per day.	6
R3	Unnamed Bayport, Harris County	Hudson Oil Corporation, Westwood, KS	unknown	100,000			New	6
R4	Unnamed Freeport, Brazoria County	Dow Chemical Company, Midland, MI	1978	200,000			New	6
R5	Unnamed Luling, Caldwell County	Gulf Energy Refining, San Antonio, TX	1977	30,000			New	6
R6	Three Rivers Refinery Three Rivers, Live Oak County	Sigmor Corp., San Antonio, TX	1976	10,000			New	6
R7	Unnamed Tucker, Anderson County	J&W Refining Company, Tucker, TX	unknown	5,000 (expansion)			Expansion. Total capacity 20,100 barrels per day.	6

TABLE 77. - Future natural gas processing plants in Texas

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
R8	Mobil Oil Plant, Hemphill County	Mobil Oil Corporation Denver, CO	1976	50-gas processing expansion 30-compression			Plant will produce 110,000 barrels of product per day. Location is county specific.	7
R9	Amoco Plant, Andrews County	Amoco Production Co.	1976	10			Plant modification, cryogenic process. Location is county specific.	7
R10	Phillips Plant, Ector County	Phillips Petroleum Company		80			Location is county specific.	7
R11	General Crude Plant, Karnes County	General Crude Oil Company	1976	10			Location is county specific.	7
R12	Exxon Plant, Matagorda County	Exxon Company, USA, Houston, TX	1976	175			Location is county specific. Plant will produce 223,600 barrels of product per day.	7
R13	Exxon Plant, Brazoria County	Exxon Company, USA, Houston, TX	1976	175			Location is county specific.	7

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2. Federal Power Commission. Proposed Generating Capacity Change for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

3. Electric Reliability Council of Texas.

4. Glass, Gary B. Directory of Wyoming Coal Companies and Contracts, Selected Other Industries, and State Agencies. Wyoming Geological Survey, January 1975.

5. Engineering and Mining Journal. 107th annual review and outlook, March 1976.

6. Federal Energy Administration. Trends in Refinery Capacity and Utilization, December 1975.

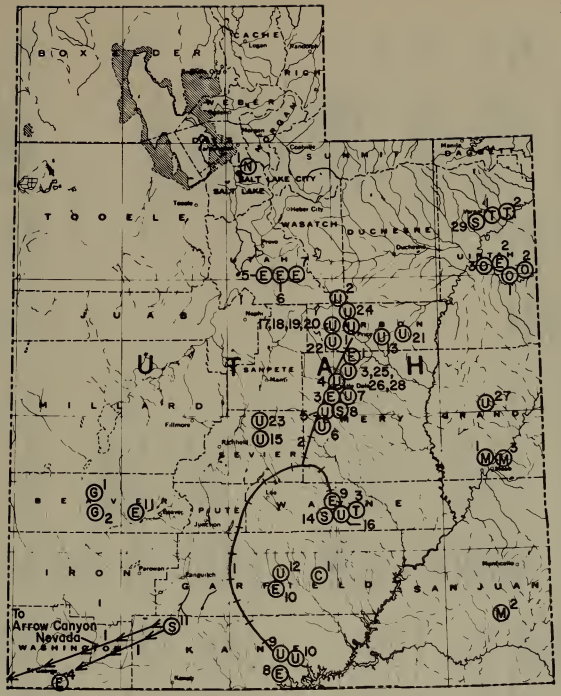
7. Oil and Gas Journal. October 6, 1975.

Utah

Data on the Utah projects listed below are presented in Tables 78 through 87. The map reference numbers correspond to the accompanying Utah map.

Map ref. no.	Project name	Company or agency
Coal mines:		
U 1	Soldier Canyon	California Portland Cement, Premium Coal Co.
U 2	Braztah Nos. 3-6	Braztah Corp.
U 3	Deer Creek	Peabody Coal Co.
U 4	Wilberg	Do.
-	Unnamed	Do.
U 5	Straight Canyon	Utah Power & Light Co.
U 6	Ferron Canyon	Inspiration Development Co.
U 7	Emery	Consolidation Coal Co.
S 8	Emery Strip	Do.
U 9	Kaiparowits	Kaiser Industries
U10	John Henry	5M Corp.
S11	Unnamed	Nevada Power Co.
U12	Escalante	Utah Power & Light Co.
U13	Unnamed	Centennial Coal Association
S14	Factory Butte	Atlas Minerals
U15	Unnamed	Clinton Oil Company
U16	Intermountain Power Project	ICPA
U17	Utah No. 2	Valley Camp of Utah, Inc.
U18	Belina No. 1	Do.
U19	Belina No. 2	Valley Camp of Utah, Inc.
U20	O'Connor No. 1	Do.
U21	Unnamed	Island Creek Coal Co.
U22	Star Point No. 3	Plateau Mining Co.
U23	Southern Utah Fuels No. 1	Coastal States Energy Co.
U24	Gordon Creek No. 3	General Exploration Co.
U25	Swisher No. 5	Swisher Coal Co.
U26	Huntington Canyon No. 4	Do.
U27	Thompson	Western American Energy Corp.
U28	Rilda Canyon	Do.
S29	Unnamed	Energy Plus Co.
Electric powerplants:		
E 1	Huntington Canyon No. 2	Utah Power & Light Co.
E 2	White River	Uintah County Water District
E 3	Emery Nos. 1 and 2	Utah Power & Light Co.
E 4	Warner Valley Nos. 1 and 2	Nevada Power Co.

Map ref. no.	Project name	Company or agency
Electric powerplants:		
E 5	DYNE No. 1	U.S. Bureau of Reclamation
E 6	Sixth Water	Do.
E 7	SYAR No. 1	Do.
E 8	Kaiparowits Nos. 1-4	Southern California Edison
E 9	Intermountain Power Project Nos. 1-4.	ICPA (LA Dept. of Water & Power and others)
E10	Garfield Nos. 1-4	Utah Power & Light Co.
E11	Alunite Project	Unknown
Coal conversion plants:		
C1	Unnamed	El Paso Natural Gas Co.
Waste-to-energy conversion plants:		
N1	Supplementary Fuel Plant	Utah Power & Light Co.
Oil shale projects:		
O1	White River	White River Shale Oil Corp.
O2	WESTCO In-situ Project	Western Oil Shale Corp.
O3	Sand Wash	The Oil Shale Corp. (TOSCO)
Tar Sand projects:		
T1	Southwest Asphalt Ridge	Arizona Fuels
T2	Northwest Asphalt Ridge	ERDA
T3	Gordon Flats	Oil Development Company of Utah
Potential geothermal facilities:		
G1	Roosevelt Hot Springs	Phillips Petroleum Co.
G2	Cove Fort Area	Union Oil Co.
Coal slurry pipelines:		
1	Bald Knoll to Arrow Canyon, NV and St. George, UT	Nevada Power Co.
Railroads:		
1	Kaiparowits Plateau to Caineville.	Utah Power & Light Co., and others.
2	Emery to Price	Castle Valley Railroad Co.
Uranium mines:		
M1	Small Fry	Ranchers Exploration & Development Corp.
M2	San Pete	Canyonlands Uranium, Inc.
M3	Hidden Splendor	Mineral Resources, Inc.



LEGEND

- (S) Strip coal mine
- (U) Underground coal mine
- (E) Electric powerplant
- (O) Oil shale project
- (T) Tar sands project
- (G) Potential geothermal facility
- (M) Uranium mine
- (N) Waste-to-energy conversion plant
- (C) Coal conversion plant
- Railroad
- Coal slurry pipeline

FIGURE 20. - Future fuels-related projects in Utah.

TABLE 78. - Future coal mines in Utah

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U1	Soldier Canyon near Price, Carbon County	California Portland Cement Co., and Premium Coal Company, Price, UT	Underground	0.5-1976 1.0-1977 (expansion)	California Portland Cement plants	Moisture-4.5% Ash-8.4% Sulfur-0.5% Btu/lb-12,500			e160	e345	Firm plans for expansion.	1,2,3
U2	Braztah Nos. 3,4,5,6 near Castlegate, Carbon County (T 13 S, R 9 E)	Braztah Corporation, Helper, UT (a subsidiary of McCulloch Oil)	Underground	6.5-1980 (expansion)	Indiana-Michigan Electric Co., and midwestern powerplants	Moisture-5.7% Ash-9.7% Sulfur-0.5% Btu/lb-12,300	Castlegate B and D beds in production			e2,250	Mines 3,4, & 5 are presently in production. Mine 6 is being developed. Coal analysis is from the Braztah No. 3 mine. Present total capacity is 0.5 million tons per year.	1,2,3,4
U3	Deer Creek near Huntington, Emery County	Peabody Coal Company, St. Louis, MO	Underground	2.5-1977 (expansion)	Mine-mouth Huntington Canyon powerplant	Moisture-3.5% Ash-5.6% Sulfur-0.6% Btu/lb-13,300				e860	Expansion of existing mine. 1974 production estimated at 1.0 million tons.	2,3,5
U4	Wilberg near Orangeville, Emery County (T 17 S, R 7 E)	Peabody Coal Company, St. Louis, MO	Underground	2.2-1980	Utah powerplants	Moisture 5.4% Ash-9.2% Sulfur-0.6% Btu/lb-12,500	13 (Hiawatha bed)			e760		2,3,5
--	Unnamed and Unlocated (probable location in Emery County)	Peabody Coal Company, St. Louis, MO	Underground	0.7-1977						e240	In planning. No significant development taken at present time. Estimated start-up in 1976.	1

TABLE 78. - Future coal mines in Utah--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment		Remarks	Data source
									Present	Maximum		
U5	Straight Canyon near Castle Dale, Emery County	Utah Power & Light Co., Salt Lake City, UT	Underground	2.5-1980	Mine-mouth proposed N. Emery powerplant					e860		2
U6	Ferron Canyon near Ferron, Emery County	Inspiration Development Company, Ferron, UT	Underground	0.5-1.0 -1980	Unknown					e345	To be developed on private land. Plans are tentative.	2
U7	Emery near Emery, Emery County	Consolidation Coal Company, Emery, UT	Underground	1.4-1980	Commercial and powerplants					e483	Expansion of existing mine. 1974 production estimated at 0.3 million tons. Old Browning Mine.	2,3
S8	Emery Strip near Emery, Emery County	Consolidation Coal Company, Emery, UT	Strip	0.5-1977	Commercial and powerplants					e33	Tentative, presently in planning stage.	1,3
U9	Kaiparowits Project (4 mines) Central Kane County	Kaiser Industries, San Francisco CA	Underground	10.0-1984	Mine-mouth Kaiparowits power project, also, possibility for Intermountain Power Project plants					e3,450	See Kaiparowits powerplant remarks for details.	1,2,3 6,7,8
U10	John Henry Mine Kaiparowits Plateau, Kane County	5 M Corporation	Underground	0.4-1977						e138	In planning stage. Production scheduled to begin in late 1976.	1

TABLE 78. - Future coal mines in Utah--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S11	Unnamed near Alton, Kane County	Nevada Power Company, Las Vegas, NV	Strip	11.5-1982	Powerplants at St. George, UT and near Las Vegas, NV	Sulfur-1.1% Btu/lb-10,200	11	90		[e]760	Impact Statement in progress. Coal slurry pipeline from mine is planned. Proposed mine on boundary of Bryce Canyon National Park. U.S. Forest Service is objecting.	2,5,22
U12	Escalante near Escalante, Garfield County	Utah Power & Light Co., Salt Lake City, UT	Underground	6.0-1985	Proposed Garfield powerplant					[e]2,070	Project in planning stage. May be dependent on water availability and environmental issues. Mining would begin in 1981.	2
U13	Unnamed Carbon County	Centennial Coal Association	Underground	0.5-1980	Commercial					[e]170	Mining plans in progress. Map location is county specific.	22
S14	Factory Butte Wayne County	Atlas Minerals	Strip	1.0-1980	Power generators					[e]345	Start-up in 1976.	1,2,22
U15	Unnamed Sevier County	Clinton Oil Company	Underground	1.0-1980	Commerical					[e]345	Mining plans in progress.	22
U16	Intermountain Power Project Mines, Wayne County	ICPA, Caineville, UT		10.0-1985	Proposed ICPA powerplant at Caineville, UT					[e]340	Developed by Utah and California private utilities.	2,22

TABLE 78. - Future coal mines in Utah--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U17	Utah No. 2 near Clear Creek, Carbon County	Valley Camp of Utah, Inc., Clear Creek, UT	Underground	0.7-1977	Western and midwestern commercial markets					e240	Start-up in 1976.	1,2
U18	Belina No. 1 near Clear Creek, Carbon County	Valley Camp of Utah, Inc., Clear Creek, UT	Underground	1.3-1977	Western and midwestern markets					e415	Planned start-up in late 1976.	1,2,22
U19	Belina No. 2 near Clear Creek, Carbon County	Valley Camp of Utah, Inc., Clear Creek, UT	Underground	0.8-1977	Western and midwestern markets					e275	Planned start-up 1977.	1,2
U20	O'Connor No. 1 near Clear Creek, Carbon County	Valley Camp of Utah, Inc., Clear Creek, UT	Underground	0.2-1977	Western and midwestern markets					e70	Planned start-up 1977.	1
U21	Unnamed near Sunnyside, Carbon County	Island Creek Coal Co., Lexington, KY	Underground	2.0-1977	Proposed California powerplant	Sulfur-0.5% Btu/lb-12,000	6.8 (seam 1) 9.8 (seam 2)	1,200		e790	Reported 200 million tons coal reserves.	3,9
U22	Star Point No. 3 near Wattis, Carbon County	Plateau Mining Company, Price, UT	Underground	1.0-1977	Diverse markets in Rocky Mountain States					e345	Planned start-up in 1976.	3

TABLE 78. - Future coal mines in Utah--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U23	Southern Utah Fuels No. 1 Salina, Sevier County	Constal States Energy Company, Houston, TX	Underground	1.5-1977 (expansion)	Southern Utah markets					e520	Production estimated at 0.4 million tons in 1974.	1,2
U24	Gordon Creek No. 3 near Helper, Carbon County	General Exploration Company, Price, UT	Underground	0.2-1977	Local & out-of-state commercial markets	Moisture-6.3% Ash-6.2% Sulfur-0.5% Btu/lb-12,500	7			e70		4
U25	Swisher No. 5 near Huntington, Emery County	Swisher Coal Co., Price, UT	Underground	0.2-1977	Local & out-of-state commercial markets	Moisture-6.5% Ash-4.9% Sulfur-0.6% Btu/lb-12,700	6-10			e70	Old Larsen-Rigby mine. U.S.G.S. has received operating plans. Production to commence when approval received.	1,4,22
U26	Huntington Canyon No. 4 near Huntington, Emery County	Swisher Coal Co., Price, UT	Underground	0.2-1977	Local & out-of-state commercial markets	Moisture-4.8% Ash-5.3% Sulfur-0.6% Btu/lb-13,200	5-14			e70	Old Leamaster mine. U.S.G.S. has received operating plans. Production to commence when approval received.	4,22
U27	Thompson Mine Thompson, Grand County	Western American Energy Corp.	Underground	0.2-1977					6	e70	Planned.	1
U28	Rilda Canyon Huntington, Emery County	Western American Energy Corp.	Underground	0.2-1977						e70	Planned.	1
S29	Unnamed near Vernal, Uintah County	Energy Plus (a subsidiary of Kandahar Resources, Vancouver, B.C.)	Strip	unknown							Minable reserves reported at 3.8 million tons with a potential of 60 million tons.	20

e Estimated, see appendix for explanation.

TABLE 79. - Future electric powerplants in Utah

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E1	Huntington Canyon No. 2 Huntington, Emery County	Utah Power & Light Company, Salt Lake City, UT	Coal-e1.3		400		June 1977		600	72	Addition to 430 MW Unit No. 1. Total water requirements estimated at 14,000 acre feet per year. Water source is the Electric Lake.	2,4,10, 11
E2	White River Uintah County	Uintah County Water District	Hydropower		3		1978		e10	e1		4,10
E3	Emery No. 1,2 Castle Dale, Emery County	Utah Power & Light Company, Salt Lake City, UT	Coal-e2.6 (total, both units)	1 2 Total	400 400 800	1 2	June 1978 Apr. 1980	1 2	700 700	130 73	Total water requirements estimated at 14,000 acre feet per year. A third unit is planned for 1990.	2,4,10, 11
E4	Warner Valley Nos. 1 & 2 St. George, Washington County	Nevada Power Co., Las Vegas, NV	Coal-e1.6 (total, both units)	1 2 Total	250 250 500	1 2	June 1981 June 1982	Total	e500	e63	Total water requirements estimated at 10,000 acre feet per year. Coal will be received by proposed slurry pipeline.	2,4,10, 11
E5	DYNE No. 1 Thistle, Utah County	U.S. Bureau of Reclamation, Colorado River Storage Project	Hydropower		33		Jan. 1981		e33	e4		2,10
E6	Sixth Water Thistle, Utah County	U.S. Bureau of Reclamation, Colorado River Storage Project	Hydropower		90		Jan. 1981		e90	e11		2,10
E7	SYAR No. 1 Thistle, Utah County	U.S. Bureau of Reclamation, Colorado River Storage Project	Hydropower		8		Jan. 1981		e10	e1		2,10

TABLE 79. - Future electric powerplants in Utah--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E8	Kaiparowits Nos. 1-4 Kaiparowits Plateau, Kane County	Southern California Edison, Rosemead, CA	Coal-10.0 (total, all units)	1 2 3 4 Total	750 750 750 750 3,000	1 2 3 4	1982 1983 1984 1984	Total		e375	Southern California Edison and San Diego Gas & Electric announced in mid-April 1976 that they have abandoned plans to proceed with development of the project citing a series of uncertainties, particularly related to ultimate costs, as the reasons. The companies will maintain their interest in coal and other rights pertaining to the project and will determine at a future time how the project might be continued, either in its present form or reconstituted in another form. Arizona Public Service Company, the third participant, will study the feasibility of getting other participants.	2,6,7 8,10, 11
E9	Intermountain Power Project Nos. 1-4 Caineville, Wayne County	ICPA (Los Angeles Dept. of Water and Power, et. al.) Los Angeles, CA	Coal-e10.0 (total, all units)	1 2 3 4 Total	750 750 750 750 3,000	1 2 3 4	1983 1984 1985 1986	Total	e3,000	e375	Water requirement estimated at 50,000 acre-feet per year.	2,10,11
E10	Garfield Nos. 1-4 Escalante, Garfield County	Utah Power and Light Company, Salt Lake City, UT	Coal-e6.5 (total, all units)	1 2 3 4 Total	500 500 500 500 2,000	1 2 3 4	1982 1985 unknown unknown	1 2 3 4	e500 e500 e500 e500	e63 e63 e63 e63		2,11,12
E11	Alunite Project Beaver County		Coal-e0.2		70		unknown		e70	e9	Wah Wah Valley ground water will be water source.	22

e Estimated, see appendix for explanation.

TABLE 80. - Future coal conversion plants in Utah

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment Construction	Peak employment Operation	Remarks	Data source
C1	Unnamed Central Garfield County	El Paso Natural Gas Company	Gasification	unknown	864 million cubic feet per day total	e3,000	e2,200	Water requirements estimated at 52,000 acre-feet per year. Plans are unknown, but El Paso has extensive coal reserves in Garfield and Kane Counties. Possible multiple units.	5

e Estimated, see appendix for explanation.

TABLE 81. - Future waste-to-fuel conversion plants in Utah

Map ref. no.	Plant name and location	Operating company	Type and feedstock	Initial operating date	Planned capacity	Peak employment Construction	Peak employment Operation	Remarks	Data Source
N1	Supplementary Fuel Plant Salt Lake City, UT	Utah Power & Light Company, Salt Lake City, UT	Solid waste to heat for electrical generation	unknown	30 MW	e30	e4	Solid waste burned with coal (20% waste, 80% coal). Feasibility studies completed.	12

e Estimated, see appendix for explanation.

TABLE 82. - Future oil shale projects in Utah

Map ref. no.	Project name and location	Operating company	Mine type	Planned capacity thousand bbl per day	Initial operating date	Peak employment Construction	Peak employment Operation	Remarks	Data source
O1	White River Shale Oil Project (Tract U-a, U-b) Eastern Uintah County	White River Shale Oil Corp., Salt Lake City, UT	Underground	50	early 1980's		1,040	Consortium of Phillips Petroleum Co., Sun Oil Co., and SOHIO. Leases acquired, environmental studies underway, and applications submitted for water rights. Plant design and mine layout in initial planning stages. Further financing may be required.	2,12,13, 14

TABLE 82. - Future oil shale projects in Utah--Continued

Map ref. no.	Project name and location	Operating company	Mine type	Planned capacity thousand bbl per day	Initial operating date	Peak employment Construc-tion	Peak employment Opera-tion	Remarks	Data source
02	WESTCO in situ Recovery Experiment 16 miles SW of Rangely, CO in Uintah County	Western Oil Shale Corp., Las Vegas, NV	in situ	Pilot opera-tion	1976			Consortium of Ashland Oil Co., SOCAL, Cities Service, Getty, Gulf, Mobil, Sun, and Standard of Indiana. Re-covery of oil from oil shale frag-ments with an underground mine ex-cavated by conventional methods. Further financing may be required.	2,12,13, 15,16
03	Sand Wash 35 miles south of Vernal, Uintah County	The Oil Shale Corp., Los Angeles, CA	Under-ground	75	1985		1,500	Has leased 14,900 acres from State of Utah. Planning underway. Core drilling will begin in early 1976 to determine the extent of the re-serves. Pre-development would also begin in 1976. State of Utah officials have approved a proposal for the company to manage the 29 individual leases as one lease. Further financing may be required.	2,12,13, 17,20

TABLE 83. - Future tar sands projects in Utah

Map ref. no.	Project name and location	Operating company	Process type	Planned capacity bbl per day	Initial operating date	Peak employment Construc-tion	Peak employment Opera-tion	Remarks	Data source
T1	Southwest Asphalt Ridge, near Vernal, Uintah County	Arizona Fuels (on SOHIO Petroleum property)	Tar sands oil ex-traction	1,250	1975			Leases acquired and environmental studies underway. Water rights have been acquired and mine layout and plant design have been completed and in ini-tial development stages. Pilot extrac-tion plant to begin operation in mid-1976.	2,12
T2	Northwest Asphalt Ridge, near Vernal, Uintah County	Energy Research and Development Administration (on SOHIO Petroleum property)	In situ tar sands oil ex-traction	unknown	1976			ERDA and SOHIO have completed lease ar-rangements. Planning is completed, mat-erials stockpiled and initial experi-ments have been completed. ERDA has produced only 50 barrels of oil after 4 weeks of burning. If perfected the process could help reach large quanti-ties of oil in tar sands deposits too deep for commercial mining. Reverse combustion fire-flood method used.	2,12

TABLE 83. - Future tar sands projects in Utah--Continued

Map ref. no.	Project name and location	Operating company	Process type	Planned capacity bbl per day	Initial operating date	Peak employment Construction	Peak employment Operation	Remarks	Data source
T3	Gordon Flats, Tar Sand Triangle Deposit, Wayne County	Oil Development Company of Utah	Tar sands oil extraction	unknown	1976			Leasing acquired and planning completed. Approvals needed from BLM and Park Service. Map location is county specific.	2,12

TABLE 84. - Potential geothermal facilities in Utah

Map ref. no.	Location	Company	Current status, plans, and other relevant information	Data source
G1	Roosevelt Hot Springs area, Beaver County	Phillips Petroleum Co. Utah Power & Light McCulloch Oil Company Geothermal Kinetics, Inc.	Previous drilling results have been favorable. Continued drilling and testing through 1979 with possible powerplant construction in the 1980-1985 time period. Map location is county specific.	2,18,19
G2	Cove Fort area, Beaver County	Union Oil Company	Possible drilling in near future. Map location as county specific.	2,19

TABLE 85. - Future coal slurry pipelines in Utah

Map ref. no.	Operating company	Proposed route Origin	Proposed route Destination	Initial operating date	Capacity million tons per year	Length miles	Pipe diameter inches	Water source and requirements, acre-feet per year	Peak employment Construction	Peak employment Operation	Remarks	Data source
1	Nevada Power Company, Las Vegas, NV	Bald Knolls 8 miles S of Alton, Utah	Parallel pipelines to St. George, UT and Arrow Canyon, NV	1980-St. George 1982-Arrow Canyon	2.3-St. George 9.1-Arrow Canyon	70-St. George 170-Arrow Canyon	12-St. George 22-Arrow Canyon	8,000 from under ground wells			Parallel lines to proposed Warner Valley powerplant at St. George, UT., and proposed H. Allen powerplant at Arrow Canyon, NV.	2,12

TABLE 86. - Future railroads (related to fuels development) in Utah

Map ref. no.	Operating company	Proposed route		Length miles	Type	Initial operating date	Peak employment		Remarks	Data source
		Origin	Destination				Construction	Operation		
1	Utah Power & Light, Intermountain Power Project, El Paso Natural Gas Company	Kaiparowits Coal Field, Kane County	Intermountain Power Project, near Caineville, Wayne County	190	spur	unknown			Proposed spur line to transport coal from Kaiparowits Plateau mines to IPP powerplant. Would help to open up El Paso Natural Gas coal reserves of 600 million tons. Feasibility study completed by Morrison-Knudsen Inc. Cost was estimated at $450 million.	7,8
2	Castle Valley Railroad Co.	Emery area, Emery County	Price-Wellington area	65	spur	1979			Proposed spur line to Emery to serve coal mines in area. Will connect with DRGW mainline near Price or Wellington, UT.	21

TABLE 87. - Future uranium mines in Utah

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity and year	Employment		Remarks	Data source
					Present	Maximum		
M1	Small Fry near Moab, Grand County	Ranchers Exploration and Development Corp.					Mine acquired in 1975.	15
M2	Pete Mine San Juan County	Canyonlands Uranium, Inc.					Reopening of mine that was closed in 1969.	20
--	Hidden Splendor Mine Emery County	Mineral Resource, Inc.		18,000 tons per year			Reopening of mine closed in 1950's. Doran Hunt Company is contractor.	20

List of Data Sources for Utah

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6. U.S. Department of Interior. Final Environmental Impact Statement on the Proposed Kaiparowits Power Project. News Release, March 5, 1976.

7. Coal Mining and Processing. March 1976.

8. Salt Lake Tribune. November 16, 1975.

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18. Biggs, Paul. U.S. Bureau of Mines, Laramie, Wyo.

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20. Colorado School of Mines Research Institute. Industrial Newsletter, March 1976.

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22. Utah Department of Natural Resources. Utah Energy Resource Data. March 1976.

Washington

Data on the Washington projects listed below are presented in Tables 88 through 91. The map reference numbers correspond to the accompanying Washington map.

Map ref. no.	Project name	Company or agency
Coal mines:		
U1	Hamilton	Coastal Energy & Coal Corp.
S1	Rosalind No. 1	R. Farrar, A. Young Co.
Electric powerplants:		
E 1	Grand Coulee, 10 units	U.S. Bureau of Reclamation
E 2	Chief Joseph Nos. 17-27	U.S. Army Corps of Engineers
E 3	Rock Island Nos. 1-8	Chelan County P.U.D.
E 4	Lower Granite Nos. 4-6	U.S. Army Corps of Engineers
E 5	Little Goose Nos. 4-6	Do.
E 6	Lower Monumental Nos. 4-6	Do.
E 7	Hanford Nos. 1-3	Washington Public Power Supply
E 8	Bonneville Nos. 11-18	U.S. Army Corps of Engineers
E 9	Mayfield No. 4	Tacoma Department of Public Utilities.
E10	Satsop Nos. 1 and 2	Washington Public Power Supply
E11	Skagit Nos. 1 and 2	Puget Sound Power & Light Co.
Uranium mines:		
M1	Sherwood	Western Nuclear, Inc.
Uranium mills:		
A1	Sherwood	Western Nuclear, Inc.

FIGURE 21. - Future fuels-related projects in Washington.

TABLE 88. - Future coal mines in Washington

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U1	Hamilton Mine near Hamilton, Skagit County	Coastal Energy & Coal Corp.	Underground	1.0-1979	Steam coal				e110	e340	Start-up in 1976. Map location is county specific.	1
S1	Rosalind No. 1	Roger Farrar and Arthur Young Co.	Strip	1.0-1980	Steam coal				0	e66	Start-up in 1977. Map location is county specific.	1

e Estimated, see appendix for explanation.

TABLE 89. - Future electric powerplants in Washington

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E1	Grand Coulee Nos. G20-G24, No. 10 uprate, No. PG9-PG12 Coulee Dam, Grant County	U.S. Bureau of Reclamation, Columbia Basin Project (Federal Columbia River Power System)	Hydropower	G20	600	G20	Apr. 1976	G20-24	450	20	Additions to existing Grand Coulee units on Columbia River.	2,3,4
				G21	600	G21	Oct. 1976					
				G22	700	G22	Sep. 1977					
				G23	700	G23	Mar. 1978					
				G24	700	G24	Sep. 1978					
				10 (uprate)	17	10	Nov. 1976					
				PG9	50	PG9	Oct. 1979	PG9-12	75	5		
				PG10	50	PG10	Feb. 1980					
				PG11	50	PG11	June 1980					
				PG12	50	PG12	Oct. 1980					
				Total	3,517							
E2	Chief Joseph Nos. 17-27 Columbia River, Douglas County	U.S. Army Corps of Engineers (Federal Columbia River Power System)	Hydropower	17	109	17	May 1977	17-27	200	10	Additions to existing Chief Joseph units on Columbia River.	2,3,4,6
				18	109	18	Aug. 1977					
				19	109	19	Nov. 1977					
				20	109	20	Feb. 1978					
				21	109	21	May 1978					
				22	109	22	July 1978					
				23	109	23	Sep. 1978					
				24	109	24	Nov. 1978					
				25	109	25	Jan. 1979					
				26	109	26	Mar. 1979					
				27	110	27	May 1979					
				Total	1,200							

TABLE 89. - Future electric powerplants in Washington--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construc-tion	Opera-tion		
E3	Rock Island Nos. 1-8 Columbia River, Chelan County	Chelan County Public Utilities District, Chelan County, WA	Hydropower	8	51	8	Aug. 1977	1-8	100	10	Additions to existing units on Columbia River.	2,3,4,6
				7	51	7	Oct. 1977					
				6	51	6	Dec. 1977					
				5	51	5	Jan. 1978					
				4	51	4	Apr. 1978					
				3	51	3	June 1978					
				2	51	2	Aug. 1978					
				1	51	1	Oct. 1978					
				Total	408							
E4	Lower Granite Nos. 4-6 Snake River, Whitman County	U.S. Army Corps of Engineers (Federal Columbia River Power System)	Hydropower	4	155	4	Jan. 1978	4-6	100	10	Addition to existing units on Snake River.	2,3,4
				5	155	5	Feb. 1978					
				6	155	6	Mar. 1978					
				Total	465							
E5	Little Goose Nos. 4-6 Snake River, Columbia County	U.S. Army Corps of Engineers (Federal Columbia River Power System)	Hydropower	4	155	4	Feb. 1978	4-6	100	10	Addition to existing units on Snake River.	2,3,4
				5	155	5	Mar. 1978					
				6	155	6	Apr. 1978					
				Total	465							
E6	Lower Monumental Nos. 4-6 Snake River, Walla Walla County	U.S. Army Corps of Engineers (Federal Columbia River Power System)	Hydropower	4	155	4	Feb. 1978	4-6	100	10	Addition to existing units on Snake River.	2,3,4
				5	155	5	Mar. 1978					
				6	155	6	Apr. 1978					
				Total	465							
E7	Hanford Nos. 1-3 Richland, Benton County	Washington Public Power Supply System	Nuclear	2	1,100	2	July 1979	2	1,200	75	Water source is Columbia River.	2,3,4
				1	1,250	1	Mar. 1981	1	1,500	100		
				3	1,250	3	Mar. 1982	3	1,200	75		
				Total	3,600							

TABLE 89. - Future electric powerplants in Washington--Continued

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity Unit no.	Planned capacity Mega-watts	Initial operating date Unit no.	Initial operating date Month and year	Peak employment Unit no.	Peak employment Construction	Peak employment Operation	Remarks	Data source
E8	Bonneville Nos. 11-18 Columbia River, Skamania County	U.S. Army Corps of Engineers (Federal Columbia River Power System)	Hydropower	11	78	11	May 1981	11-18	100	10	Addition to existing units on Columbia River.	2,3,4,6
				12	78	12	July 1981					
				13	78	13	Sep. 1981					
				14	77	14	Nov. 1981					
				15	78	15	Jan. 1982					
				16	78	16	Mar. 1982					
				17	78	17	May 1982					
				18	77	18	July 1982					
				Total	622							
E9	Mayfield No. 4 Mayfield Reservoir, Lewis County	Tacoma Department of Public Utilities, Tacoma, WA	Hydropower		40		Jan. 1980		[e]40	[e]5		4,6
E10	Satsop Nos. 1,2 Satsop, Grays Harbor County	Washington Public Power System	Nuclear	1	1,240	1	Mar. 1982	1	1,200	75	Water source is Satsop River.	2,3,4
				2	1,240	2	Sep. 1983	2	1,200	75		
				Total	2,480							
E11	Skagit Nos. 1,2 Sedro Wooley, Skagit County	Puget Sound Power & Light Company	Nuclear	1	1,288	1	July 1983	1	1,200	75	Water source is Skagit River.	2,3,4,6
				2	1,288	2	July 1985	2	1,200	75		
				Total	2,576							

[e] Estimated, see appendix for explanation.

TABLE 90. - Future uranium mines in Washington

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity and year	Employment Present	Employment Maximum	Remarks	Data source
M1	Sherwood Mine Welpinit, Stevens County (T 28 N, R 37 E)	Western Nuclear, Denver, Colorado	Open pit	2,000 tons per day	0	120	Ore reserves reported at 12 million pounds of U_3O_8.	5

TABLE 91. - Future uranium mills and enrichment facilities in Washington

Map ref. no.	Plant name and location	Operating company	Type	Initial operating date	Planned capacity	Peak employment		Remarks	Data source
						Construction	Operation		
A1	Sherwood Mill Welpinit, Stevens County (T 28 N, R 37 E)	Western Nuclear, Denver, Colorado	Uranium Solvent Extraction	1979	2,000 tons per day of ore		60	Ore from Sherwood Mine.	5

List of Data Sources for Washington

1. Coal Age. New Coal Mine Development and Expansion Survey, February 1976.

2. Bonneville Power Administration. Powerplant Employment Estimates on file at U.S. Bureau of Mines State Liaison Office, Olympia, Wash.

3. Pacific Northwest River Basins Commission. Review of Power Planning in the Pacific Northwest (draft), calendar year 1975.

4. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1976 in response to Docket R-362, Order 383-3.

5. Engineering and Mining Journal. 1976 E/MJ Survey of Mine and Plant Expansion, January 1976.

6. McKinley, John L., Administrative Manager, Western Systems Coordinating Council, Denver, Colo.

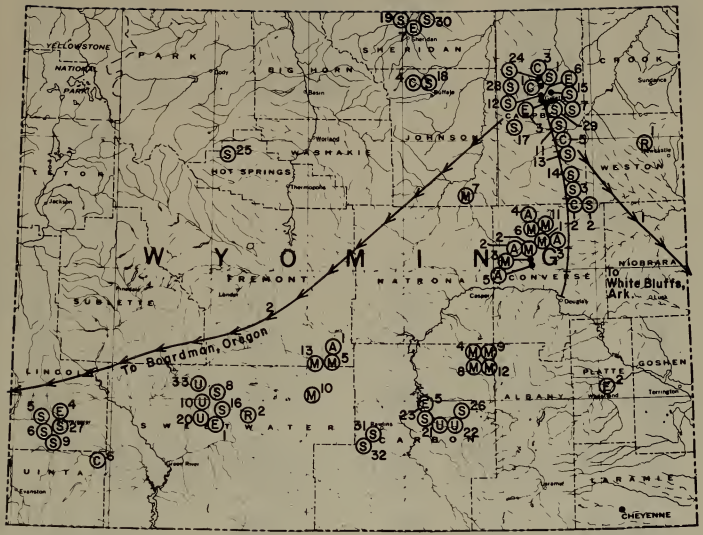
Wyoming

Data on the Wyoming projects listed below are presented in Tables 92 through 100. The map reference numbers correspond to the accompanying Wyoming map.

Map ref. no.	Project name	Company or agency
Coal mines:		
S 1.....	North Rawhide.....	Carter Mining Co.
S 2.....	Rochelle.....	Peabody Coal Co.
S 3.....	Black Thunder.....	Atlantic Richfield Co.
S 4.....	Big Horn No. 1.....	Big Horn Coal Co.
S 5.....	Sorensen.....	Kemmerer Coal Co.
S 6.....	Elkol.....	Do.
S 7.....	Wyodak North and South.....	Wyodak Resources Development
S 8.....	Bridger.....	Bridger Coal Co.
S 9.....	FMC.....	FMC Corp.
U10.....	Stansbury No. 1.....	Stansbury Coal Co.
S11.....	Belle Ayr (South).....	AMAX Coal Co.
S12.....	Belle Ayr (North).....	Do.
S13.....	Cordero.....	Sunoco Energy Development Co.
S14.....	Jacobs Ranch.....	Kerr-McGee Corp.
S15.....	East Gillette.....	Do.
S16.....	Black Butte.....	Black Butte Coal Co.
S17.....	Thunderbird.....	El Paso Natural Gas Co.
S18.....	Lake De Smet.....	Texaco, Inc.
S19.....	PSO Mine.....	Public Service Company of Oklahoma.
U20.....	Rainbow No. 8.....	Columbine Mining Co.
U21.....	Vanguard No. 2.....	Energy Development Co.
U22.....	Vanguard No. 3.....	Do.
S23.....	Medicine Bow.....	Medicine Bow Coal Co.
S24.....	Buckskin.....	Shell Oil Co.
S25.....	Grass Creek.....	Northwestern Resources
S26.....	Hanna.....	Rocky Mountain Energy Co.
S27.....	Twin Creek.....	Do.
S28.....	Unnamed.....	Falcon Coal Co.
S29.....	Coballo.....	Carter Mining Co.
S30.....	Whitney.....	Peter Kiewit Sons' Co.
S31.....	Red Rim.....	Rocky Mountain Energy Co.
S32.....	China Butte.....	Do.
U33.....	Long Canyon.....	Do.

Map ref. no.	Project name	Company or agency
Electric powerplants;		
E1	Jim Bridger Nos. 2-4	Pacific Power & Light Co.
E2	Laramie River Nos. 1-3	Tri-State Generation & Transmission.
E3	Wyodak No. 1	Black Hills Power & Light Co.
E4	Naughton Nos. 4 and 5	Utah Power & Light Co.
E5	Seminoe No. 4	U.S. Bureau of Reclamation
E6	Gillette No. 1	Unknown
E7	Sheridan Project	Pacific Power & Light Co.
Coal conversion plants:		
C1	Unnamed	Carter Oil Co.
C2	...do	Panhandle Eastern Pipeline Co.
C3	...do	Northern Natural Gas Co.
C4	...do	Texaco, Inc.
C5	Hoe Creek	ERDA
C6	Unnamed	Champlin Petroleum and Union Pacific Railroad.
Coal slurry pipelines:		
1	Campbell County to White Bluffs, AR	Energy Transportation Systems, Inc.
2	Campbell County to Boardman, OR	Gulf Interstate and Northwest Pipeline
Railroads:		
1	Gillette to Douglas	Burlington Northern, Inc., and Chicago and Northwestern Transportation Co.
Uranium mines:		
M 1	Highland	Exxon Company, USA
M 2	Bill Smith	Kerr-McGee Corp.
M 3	Morton Ranch	United Nuclear Corp.
M 4	UJV	Getty Oil Co.
M 5	Crooks Gap-Green Mountain	Western Nuclear, Inc.
M 6	Bear Creek	Rocky Mountain Energy Co.
M 7	Unnamed	U.S. Energy
M 8	...do	Union Carbide Corp.
M 9	...do	Primary Fuels, Inc.
M10	...do	Minerals Exploration Co.
M11	Nubeth	Nuclear Dynamics
M12	Unnamed	Wold Nuclear, Inc.
M13	...do	Utah International, Inc.

Map ref. no.	Project name	Company or agency
Uranium mills:		
A1	Jeffrey City	Western Nuclear, Inc.
A2	Bill Smith	Kerr-McGee Corp.
A3	Highland	Exxon Company, USA
A4	Bear Creek	Rocky Mountain Energy Co.
A5	Morton Ranch	United Nuclear Corp.
Oil refineries:		
R1	Osage	Burlington Northern, Inc.
Natural gas processing plants:		
R2	Table Rocks	Colorado Insterstate Gas



LEGEND

- (S) Strip coal mine
- (U) Underground coal mine
- (E) Electric powerplant
- (C) Coal conversion plant
- (M) Uranium mine
- (A) Uranium mill
- (R) Oil refinery or natural gas processing plant
- Railroad
- Coal slurry pipeline

FIGURE 22. - Future fuels-related projects in Wyoming.

TABLE 92. - Future coal mines in Wyoming

Map ref. no.	Mine name and location	Operator	type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S1	North Rawhide near Gillette, Campbell Co. (T 51 N, R 72 W)	Carter Mining Co., Gillette, WY	Strip	8.5 - 1980	Indiana & Michigan Elec. Co.; Nebraska City, Nebraska powerplant; possible coal gasification	Moist - 31.0% Ash - 6.0% Sulfur- 0.4% Btu/lb- 8,100	No. 1 - 25 No. 2 - 82 (Wyodak-Anderson)	20 - 240		[e]560	Planned for 1976. Construction delayed by Sierra Club injunction, but has now resumed.	1,2, 29
S2	Rochelle southern Campbell Co. (T 42 N, R 70 W)	Peabody Coal Co., St. Louis, MO	Strip	5.0 - 11.0 - 1980	Panhandle Eastern coal gasification plant	Moist - 28.0% Ash - 5.6% Sulfur- 0.3% Btu/lb- 8,400	52 (Wyodak-Anderson)	20 - 150		225	Panhandle Eastern Pipeline Co. proposes to build a gasification plant 15 miles NE of Douglas, WY. Production schedule is dependent upon construction of the gasification plant.	2,3, 29
S3	Black Thunder south of Gillette, Campbell Co. (T 43 N, R 70 W)	Atlantic-Richfield, Gillette, WY	Strip	7.0 - 10.0 - 1980	Nebraska Public Power District powerplants; OK Gas & Elec. Co. powerplants; Southwestern Public Service Co. powerplants	Moist - 28.1% Ash - 4.8% Sulfur- 0.3% Btu/lb- 8,600	60 - 73 (Wyodak-Anderson)	15 - 240		250	Delayed by Sierra Club injunction. Mining plan approved by Interior.	2,3, 29
S4	Big Horn #1 Sheridan Co. (T 57 N, R 84 W)	Big Horn Coal Co., Sheridan, WY	Strip	1.5 - 1980 (expansion)	Mid-western powerplants	Moist - 24.5% Ash - 5.8% Sulfur- 0.7% Btu/lb- 9,300	22 - 26 (Monarch) 21 - 25 (Dietz No. 2) 10 - 11 (Dietz No. 3)	15 - 250	69	69	Expansion to meet contractual obligations. 1975 production estimated at 1.0 million tons.	2,3, 29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S5	Sorensen near Kemmerer, Lincoln Co. (T 20 & 20 N, R116 & 117 W)	Kemmerer Coal Co., Frontier, WY	Strip	3.0 - 4.7 - 1980 (expansion)	Naughton power complex	Moist - 20.9% Ash - 4.8% Sulfur- 0.6% Btu/lb-9,500	4 - 35 (Adaville seams)	25 - 140	300	350	Expansion of present mine for increase of Utah Power & Light's Naughton plant from 710 to 1,540 MW. 1974 production estimated at 2.5 million tons.	2,3
S6	Elkol near Kemmerer Lincoln Co. (T 20 & 21 N, R 116 & 117 W)	Kemmerer Coal Co., Frontier, WY	Strip	1.1 - 1980 (expansion)	Allied Chemical, Amalgamated Sugar Co., and others	Moist - 20.4% Ash - 3.0% Sulfur- 0.7% Btu/lb-10,200	80 - 100 (Adaville No. 1)	25 - 140	35	80	Thick Adaville No. 1 coal is reserved for this commercial tipple; spot sales expected to increase. 1974 production estimated at 0.9 million tons.	2,3, 29
S7	Wyodak North & South near Gillette, Campbell Co. (T 50 N, R 71 W)	Wyodak Resources Development, Gillette, WY	Strip	2.2 - 1980 (expansion)	Wyodak powerplant	Moist - 29.2% Ash - 9.6% Sulfur- 0.8% Btu/lb- 8,200	80 - 110 (Wyodak-Anderson)	20 - 110	28	190	Expansion of present mine for new 330 MW Wyodak powerplant. 1974 production estimated at 0.7 million tons.	2,3, 29
S8	Bridger near Point-of-Rocks, Sweetwater County (T 20 & 21 N, R 100&101 W)	Bridger Coal Co., Rock Springs, WY, (a subsidiary of Pacific Power & Light)	Strip	7.5 - 1980 (expansion)	Jim Bridger powerplant	Moist - 20.5% Ash - 9.7% Sulfur- 0.5% Btu/lb-9,300	15 - 30 (Deadman)	40 - 150	120	200	Captive mine expansion for powerplant. 1974 production estimated at 0.7 million tons.	1,2,3
S9	FMC Mine south of Kemmerer, Lincoln Co., (T 20 N, R 117 W)	FMC Corporation, Kemmerer, WY	Strip	1.0 - 2.0 - 1980 (expansion)	FMC trona plant, Green River, WY	Moist - 20.9% Ash - 4.8% Sulfur- 0.6% Btu/lb- 9,500	40 - 60 (Adaville No. 1)	40 - 120	60	100	Opened in 1975 with an estimated production of 0.6 million tons. A 4.5 mile railroad spur line is also planned.	2,3, 29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
U10	Stansbury No.1 north of Rock Springs, Sweetwater County (T 20 N, R 104 & 105 W)	Stansbury Coal Co., Denver, CO (a joint-venture of Rocky Mountain Energy Company and Potash Corporation of America)	Underground	1.4 - 1980	Ideal Cement Co. and other industrial con-	Moist - 17.5% Ash - 4.7% Sulfur- 1.1% Btu/lb-10,500	9 - 11 (Rock Springs No. 1,3,7, 7½,8,9)	1,800		275	Opening planned for 1976.	2,3, 29
S11	Belle Ayr South south of Gillette, Campbell Co., (T 47 & 48 N, R 71 W)	Amax Coal Co., Gillette, WY	Strip	10.0 - 15.0 - 1980 (expansion)	Midwestern western, southwestern, and Pacific northwest powerplants	Moist - 26.2% Ash - 5.3% Sulfur- 0.6% Btu/lb- 8,800	70 (Wyodak-Anderson)	15 - 200		350	Expansion of present mine. Draft EIS released. 1975 capacity estimated at 6.4 million tons.	1,2,3, 29
S12	Belle Ayr North south of Gillette, Campbell Co. (T 51 & 52 N, R 72 W)	Amax Coal Co., Gillette, WY	Strip	10.0 - 1980 20.0 - 1984	Midwestern, western, southwestern, and Pacific northwestern powerplants	Moist - 29.2% Ash - 9.6% Sulfur- 0.8% Btu/lb- 8,200	50 - 120 (Wyodak-Anderson) 2 benches	6 - 325	0	350	1979 opening planned.	1,2,3, 29
S13	Cordero south of Gillette, Campbell Co. (T 47 N, R 71 W)	Sunoco Energy Development Co., Gillette, WY	Strip	12.0 - 1981	San Antonio Public Service powerplants, and Tri-State Generation powerplant at Wheatland, WY		3 benches, each 20 (Wyodak-Anderson)	200		400	Subsidiary of Sun Oil Company.	1,2,3, 29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S14	Jacobs Ranch south of Gillette, Campbell Co. (T 43 N, R 70 W)	Kerr-McGee Corp., Gillette, WY	Strip	14.0 - 1983	Arkansas Power & Light, Central Louisiana Electric Co., Gulf States Utilities and Public Service of Oklahoma powerplants	Moist - 29.0% Ash - 5.8% Sulfur- 0.5% Btu/lb- 8.5%	10 - 150 (Wyodak-Anderson) 3 benches			300	Planned opening in 1977.	1,2,3, 29
S15	East Gillette east of Gillette, Campbell Co. (T 50 N, R 71 W)	Kerr-McGee Corp., Gillette, WY	Strip	5.0 - 11.0 - 1980	Arkansas Power & Light, Central Louisiana Electric Co., Gulf States Utilities, and Public Service of Oklahoma powerplants		50 - 75 (Wyodak-Anderson)	Less than 200		300	Planned opening in 1977.	1,2,3, 29
S16	Black Butte near Point-of-Rocks, Sweetwater Co. (T 19 N, R 100 W)	Black Butte Coal Co., Sheridan, WY (a joint-venture of Peter Kiewit Sons Co., and Rocky Mountain Energy Co.)	Strip	4.2 - 1980	Idaho Power Co. power-plant	Moist - 17.7% Ash - 8.5% Sulfur- 0.4% Btu/lb- 9,700	5 - 26 (Deadman, Ute, Lebar, Nuttal, Overland, Gibraltar, Black Butte, Maxwell, and Hall)	40 - 150	35	200	Opening planned for 1977. 3-mile rail-road spur line is also planned.	1,2,3, 29
S17	Thunderbird Campbell Co.	El Paso Natural Gas Co., El Paso TX, and Western Fuels Associ-ation, Torrington, WY	Strip	3.0 - 1979	Powerplants	Moist - 27.7% Ash - 13.4 Sulfur- 0.6% Btu/lb- 7,600	12 - 15 (Felix and Ulm)	Less than 150		225	Very tentative. Joint development agreement signed. Have 20,000 acres of prospecting permits formerly held by Wold & Jenkins. Surface lease only.	1,3, 29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S18	Unnamed Lake DeSmet area near Buffalo, Johnson Co.	Texaco, Inc., Story, WY	Strip		Coal gasification plant	Moist - 28.5% Ash - 7.6% Sulfur- 0.6% Btu/lb 7,900	50 - 220 (Healy)				Submitted application to ERDA for pilot gasification plant.	2,3
S19	PSO Mine Roush-Gregory Property, Sheridan Co. (T 58 N, R 84 W)	Public Service Co. of Oklahoma, Lakewood, CO	Strip	0.5 - 1978	Oklahoma powerplants		20 (Anderson) 40 - 50 (Dietz)			[e]50	Start-up in 1976.	2,3 29
U20	Rainbow No. 8 near Rock Springs, Sweetwater County (T 18 N, R 105 W)	Columbine Mining Co., Glenwood Springs, CO	Underground	0.2 - 1980 (expansion)	Mine-mouth coke plant	Moist - 11.4% Ash - 4.2% Sulfur- 0.9% Btu/lb-11,700	4 - 6 (Rock Springs No. 7)	300	70	70	Entire production is converted into synthetic coke at mine-mouth plant. Coke is sold to Monsanto Co. phosporus plant, Soda Springs, ID. 1974 production estimated at 0.1 million tons.	2,29
U21	Vanguard No.2 near Hanna, Carbon Co. (T 22 N, R 82 W)	Energy Development Co., Hanna WY (a subsidiary of Iowa Public Service Co.)	Underground	1.0-2.0 - 1980	Iowa Public Service Co. powerplants	Moist - 13.0% Ash - 11.5% Sulfur- 0.4% Btu/lb- 9,800	9 - 15 (Bed No. 50)	300	120	120		1,2
U22	Vanguard No.3 near Hanna, Carbon County (T 22 N, R 82 W)	Energy Development Co., Hanna, WY (a subsidiary of Iowa Public Service Co.)	Underground	0.5 - 1978	Iowa Public Service Co. powerplants	Moist - 9.6% Ash - 5.7% Sulfur- 0.7% Btu/lb-11,213	9 (Bed No. 65)				Now active.	1,2, 29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S23	Medicine Bow near Hanna, Carbon County (T 23 & 24 N, R 83 & 84 W)	Medicine Bow Coal Co., St. Louis, MO (a subsidiary of Rocky Mountain Energy Co., and Arch Minerals Co.)	Strip	3.6 - 1980 (expansion)	Northern Indiana Public Service Co. and others	Moist - 12.0% Ash - 7.5% Sulfur- 0.5% Btu/lb-10,200	3 - 60 (Bed No. 62,63, 64,65,66)	20 - 200	135	135	Opened in 1975 with the estimated production of 3.0 million tons.	1,2, 29
S24	Buckskin Mine north of Gillette, Campbell Co.	Shell Oil Co., Houston, TX	Strip	4.0 - 1980	Shell Oil Co. Houston refinery	Btu/lb- 8,200	100 (Wyodak-Anderson)			250	Very tentative.	2,3
S25	Grass Creek near Grass Creek, Hot Springs, Co. (T 46 N, R 99 W)	Northwestern Resources, Billings, MT (a subsidiary of Western Energy Co.)	Strip	0.7 - 1980 (expansion)		Moist - 12.1% Ash - 9.0% Sulfur- 0.4% Btu/lb-10,800	24 - 32 (Mayfield)	2		100	Requesting permission to expand mine to 700,000 tons per year. 1975 production is estimated at 8,000 tons	3
S26	Hanna near Elmo, Carbon County (T 22 & 23 N, R 80 & 81 W)	Rocky Mountain Energy Co., Denver, CO	Underground	2.5 - 1980	Powerplant	Moist - 11.5% Ash - 6.6% Sulfur- 0.9% Btu/lb-10,665	16 (No. 80) 9 (No. 82)	300-800			In planning stages. Expect 90 percent recovery. 1977-78 opening is planned. Joint venture with Dravo.	3,4, 29
S27	Twin Creek Project near Kemmerer, Lincoln Co. (T 21 N, R 116 W)	Rocky Mountain Energy Co., Denver, CO	Strip	3.0 - 1980			5 - 60 (Adaville coals)	40-710		200	Adjacent to Kemmerer Coal Co. operation. In planning stages.	3,29

TABLE 92. - Future coal mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operator	Mine type	Planned annual production, million tons in year	Planned markets	Coal analysis	Seam thickness, feet	Depth or overburden thickness, feet	Employment Present	Employment Maximum	Remarks	Data source
S28	Unnamed near Felix, Campbell Co. (T 51 N, R 74 W)	Falcon Coal Company	Strip	0.3 - 1977			(Felix)				In planning stages.	3,29
S29	Coballo South of Gillette, Campbell Co. (T 48 N, R 70 & 71 W)	Carter Oil Co.,	Strip	2.0 - 5.0 1980			70 (Wyodak-Anderson)	20-200		150	In planning stages.	3,29
S30	Whitney Mine Sheridan Co. (T 57 & 58 N, R 83 W)	Peter Kiewit Sons Co., Sheridan, WY	Strip	Unknown							In planning stage.	3
S31	Red Rim SW of Rawlins, Carbon County (T 20 N, R 90 W)	Rocky Mountain Energy Co., Denver, CO	Strip	2.5 - 1980	Iowa Public Service powerplant					e165	Joint-venture with Energy Development Company.	29
S32	China Butte SW of Rawlins, Carbon County (T 18 N, R 91 W)	Rocky Mountain Energy Co. Denver, CO	Strip	1.0 - 3.0 1980						e198	Joint-venture with Arch Minerals.	29
U33	Long Canyon NW of Superior, Sweetwater Co. (T 21 N, R 104 W)	Rocky Mountain Energy Co., Denver, CO	Underground	Unknown							Joint-venture with Sunoco Energy Development Company.	29

e Estimated. See Appendix for explanation.

TABLE 93. - Future electric powerplants in Wyoming

Map ref. no.	Plant name and location	Operating company	Planned fuel, million tons per year for coal	Planned capacity		Initial operating date		Peak employment			Remarks	Data source
				Unit no.	Mega-watts	Unit no.	Month and year	Unit no.	Construction	Operation		
E1	Jim Bridger Nos. 2, 3, 4 Rock Springs, Sweetwater County	Pacific Power & Light Co., Portland, OR	Coal - e5.4 (total, all units)	2 - 500 3 - 500 4 - 500 Total 1,500		2 - June 1976 3 - Mar. 1977 4 - Sep. 1979		Total	e1,500	e188	Planned additions to existing 500 MW unit. Coal supplied by captive Bridger coal mine.	5
E2	Laramie River Nos. 1, 2, 3 Wheatland, Platte County	Tri-State Generation & Transmission Association, Sioux Falls, SD	Coal - e4.8 (total, all units)	1 - 500 2 - 500 3 - 500 Total 1,500		1 - Apr. 1980 2 - Oct. 1981 3 - Apr. 1983		Total	2,200	e188	Coal will be supplied by Sun Oil's Cordero mine and possibly the Thunderbird project.	5
E3	Wyodak No. 1 Gillette, Campbell County	Black Hills Power & Light Co., Rapid City, SD	Coal - e1.1		330		May 1978		e330	e41	Will be world's largest air-cooled powerplant. Plan to use reclaimed waste water from Gillette municipal sewage disposal system. Coal will be provided by Wyodak North & South mines.	5
E4	Naughton Nos. 4, 5 Kemmerer, Lincoln County	Utah Power & Light Co., Salt Lake City, UT	Coal - 2.8	4 - 415 5 - 415 Total 830		4 - Apr. 1979 5 - Apr. 1981		Total	e830	e108	Addition to existing units totaling 710 MW. Coal provided by Kemmerer Coal Company Sorensen mine.	5
E5	Seminoe No. 4 Seminoe Dam, Carbon County	U.S. Bureau of Reclamation	Hydropower		4		1977				Addition to 3 existing units totaling 32 MW.	5
E6	Gillette No. 1	Unknown	Coal - e1.1		330		1988		e330	e41	Possible plant in Gillette area. May expand by 500 MW in 2000.	6
E7	Sheridan Project Sheridan, Sheridan County	Pacific Power & Light Company Portland, OR	Coal - e1.6		500				e500	e63	Proposed plant at Sheridan. Peter Kiewit & Sons Co. will supply the coal.	7

e Estimated, see Appendix for explanation.

TABLE 94. - Future coal conversion plants in Wyoming

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment		Remarks	Data source
						Construction	Operation		
C1	Unnamed north of Gillette, Campbell County	Carter Oil Co., Denver, CO	Gasification	1982	250 MMcfd	e1,125	e600	Studies and planning began in 1974.	8
C2	Unnamed northeast of Douglas, Converse County	Panhandle Eastern Pipeline Co., Denver, CO	Gasification-Lurgi process	Unknown	270 MMcfd	e1,215	e648	Seeking water rights. Construction postponed. Peabody's Rochelle mine will supply coal at an estimated rate of 25,000 tons per day. Current reports express doubt as to whether project will ever be constructed.	9
C3	Unnamed Powder River Basin, Campbell County (also southeastern Montana)	Northern Natural Gas Co., Omaha, NE, and Cities Service Gas Company	Gasification	2 units - 1981 2 units - 1984	4 units, each 250 MMcfd (ultimate Wyoming capacity will be 500 MMcfd)	e2,250	e1,200	Ultimately 4 plants of 250 million cubic feet per day each. Two plants are proposed for northern Cheyenne Reservation in Montana and two north of Gillette, WY. Peabody would supply coal at an estimated 27,100 tons per day for each unit. Employment estimates represent totals for Wyoming.	9,10
C4	Unnamed Lake De Smet area, Johnson County	Texaco, Inc., Story, WY	Gasification		30	1,500-2,000		In planning. Pilot plant plans submitted to ERDA for review. Possibility of large gasification and/or liquefaction complex in the future. An 8-year time period is planned for the project.	11,12
C5	Hoe Creek 20 miles south of Gillette, Campbell County	ERDA	In-situ gasification	Experiments in progress				Explosive fracturing of coal at 150-foot depth. Ultimate goal is to produce a medium-Btu gas which can be upgraded to pipeline quality.	13

TABLE 94. - Future coal conversion plants in Wyoming--Continued

Map ref. no.	Plant name and location	Operating company	Type and process	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
C6	Unnamed Northeast Uinta County	Champlin Petroleum and Union Pacific Railroad	Gasification	Early planning stages	250	e1,125	e600		28

e Estimated, see Appendix for explanation.

TABLE 95. - Future coal slurry pipelines originating in Wyoming

Map ref. no.	Operating company	Proposed route: Origin	Proposed route: Destination	Initial operating date	Capacity, million tons per year	Length, miles	Pipe diameter, inches	Water source and requirements, acre-feet per year	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Energy Transportation Systems, Inc., Casper, WY	South of Gillette, Campbell County	White Bluff, Arkansas	1980	25	1,036	38	15,000 acre-feet per year from underground wells in the Madison Formation	7,000	335	Delayed in obtaining right-of-ways across railroad line. The project is suspended until the required legislation authorizes the right of eminent domain. Proposed route will cross Wyoming, Nebraska, Kansas, Oklahoma, and Arkansas.	14,15, 16,17
2	Gulf Interstate Engineering Co., Houston, TX and Northwest Pipeline Co., Salt Lake City, UT	near Gillette, Campbell County	Boardman, Oregon	1980	10	1,100	20 - 24				Proposed route will cross Wyoming, Idaho and Oregon.	14,15, 16,17, 18

TABLE 96. - Future railroads (related to fuels development) in Wyoming

Map ref. no.	Operator	Proposed route: Origin	Proposed route: Destination	Miles	Type	Completion date	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
1	Burlington Northern and Chicago & Northwestern Railroads	Gillette, Campbell County	Douglas, Converse County	126	Main Line	1977 or 1978			Single track with numerous sidings. Project approved by ICC in January 1976. Construction to begin in 1976. In addition to the above, there will most likely be many spur lines constructed from the various listed future energy facilities to the railroad main lines in Wyoming. These have not been listed.	19,20

TABLE 97. - Future uranium mines in Wyoming

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity in year	Employment: Present	Employment: Maximum	Remarks	Data source
M1	Highland Mine southwest of Bill, Converse County (T 36 N, R 72 W)	Exxon, Houston, TX	Open pit & underground	3,000 - 3,200 tons per day - 1977	115		Open pit in operation. Underground under construction.	3,21
M2	Bill Smith Mine southwest of Bill, Converse County (T 36 N, R 74 W)	Kerr-McGee	Open pit & underground	700 tons per day - initial rate in 1976			Underground operation to start first. Possibility for three underground and several open-pit operations. Company signed contract for delivery of 20 million pounds of uranium to Public Service Electric & Gas of New Jersey between 1980 and 1995.	3,21
M3	Morton Ranch southwest of Bill, Converse County (T 35 & 36 N, R 72 & 73 W)	United Nuclear Corporation	Open pit & Underground	100 tons per day - initial rate in 1976		280	Open pit to begin first.	3,21, 22

TABLE 97. - Future uranium mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity in year	Employment Present	Employment Maximum	Remarks	Data source
M4	UJV Operation Shirley Basin area, Carbon County (T 27 & 28 N, R 78 & 79 W)	Getty Oil	Open pit	1,000 tons per day of ore			Reported 15 - 20 year operation planned. Old Petrotomics mine.	3,22
M5	Crooks Gap - Green Mountain near Jeffrey City, Fremont County (T 28 N, R 91 W)	Western Nuclear, Denver, CO	Open pit & underground	1,500 tons per day - 1977	275	600	Expansion of mining operations. Present capacity is 600,000 pounds per year of U_3O_8.	3,21, 22
M6	Bear Creek west of Bill, Converse County (T 38 & 39 N, R 72 & 73 W)	Rocky Mountain Energy Company, Denver, CO	Open pit	1,000 tons per day - 1977		250	Mine life estimated at 12 years. Joint-venture with Mono Power Co. Southern California Edison and San Diego Gas & Electric have contracted for entire output.	3,23, 24
M7	Unnamed near Kaycee, Johnson County (T 44 N, R 81 W)	U.S. Energy Company	Open pit	0.5 - 1.0 million tons per year			In planning stage.	3
M8	Unnamed Shirley Basin, Carbon County (T 26 N, R 94 W)	Union Carbide New York, NY	Open pit	0.5 - 1.0 million tons per year			In planning stage.	3
M9	Unnamed Shirley Basin, Carbon County T 27 N, R 78 W)	Primary Fuels, Inc.	Open pit				In planning stage.	3
M10	Unnamed northeast Sweetwater County	Minerals Exploration Company	Open pit				Joint-venture with Silver Bell Industries.	3

TABLE 97. - Future uranium mines in Wyoming--Continued

Map ref. no.	Mine name and location	Operating company	Mine type	Planned capacity in year	Employment Present	Employment Maximum	Remarks	Data source
M11	Nubeth Converse County	Nuclear Dynamics, Phoenix, AZ					Joint-venture exploration program with Bethlehem Steel reports finding extensive mineralization in northeastern Wyoming. Probable location is Converse County. Development plans are not known. Map location is not site specific.	23
M12	Unnamed Shirley Basin, Carbon County	Wold Nuclear, Inc., Casper, WY					Company has recently purchased reserves from Silver Bell Industries of Denver, CO. Map location is not site specific.	24
M13	Unnamed Green Mountain, Fremont County	Utah International, Inc.	Open pit				Plans a series of 9 pits. Awaiting State approval. Development planned for mid-1976.	27

TABLE 98. - Future uranium mills and enrichment facilities in Wyoming

Map ref. no.	Plant name and location	Operating company	Type	Initial operating date	Planned capacity	Peak employment Construction	Peak employment Operation	Remarks	Data source
A1	Jeffrey City Mill Jeffrey City, Fremont County	Western Nuclear, Inc., Denver, CO	Mill	1977	2 million pounds of U_3O_8 per year			Expansion program at mining operation.	3,21
A2	Bill Smith Mill southwest of Bill, Carbon County	Kerr-McGee	Mill	1976	700 tons per day - initial rate				3,21

TABLE 98. - Future uranium mills and enrichment facilities in Wyoming--Continued

Map ref. no.	Plant name and location	Operating company	Type	Initial operating date	Planned capacity	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
A3	Highland Mill southwest of Bill, Converse County	Exxon, Houston, TX	Mill	1977	2,000 tons per day			In operation. Expansion of existing facilities.	3,21
A4	Bear Creek west of Bill, Converse County	Rocky Mountain Energy Company, Denver, CO	Mill	1977	1,000 tons per day-initial rate			Output contracted to Southern California Edison and San Diego Gas & Electric.	23
A5	Morton Ranch southwest of Bill, Converse County	United Nuclear	Mill	1976	100 tons per day-initial rate				3,21

TABLE 99. - Future oil refineries in Wyoming

Map ref. no.	Refinery name and location	Operating company	Initial operating date	Planned throughput, barrels per day of crude oil	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
R1	Osage Plant Osage, Weston County	Burlington Northern Billings, MT	1976	3,000			All products from plant are to be used by the Burlington Northern Railroad.	26

TABLE 100. - Future natural gas processing plants in Wyoming

Map ref. no.	Plant name and location	Operating company	Initial operating date	Planned throughput, million cubic feet per day	Peak employment: Construction	Peak employment: Operation	Remarks	Data source
R2	Table Rocks Table Rocks, Sweetwater County	Colorado Interstate Gas Company	1977	60 - 120	35	110	Sour gas plant. Expect 90-270 tons of sulfur per day. Madison gas zone.	28

List of Data Sources for Wyoming

1. Coal Age. New Coal Mine Development and Expansion Survey, February 1976.

2. Glass, Gary B. Directory of Wyoming Coal Companies and Contracts, Selected Other Industries, and State agencies. Wyoming Geological Survey, January 1975.

3. Wyoming State Department of Environmental Quality, Cheyenne, Wyo.

4. Rocky Mountain News. March 12, 1976.

5. Federal Power Commission. Proposed Generating Capacity Changes for the period 1975 through 1984. Reported April 1, 1975 in response to Docket R-362, Order 383-3.

6. Federal Energy Administration, Region VIII, Denver, Colo.

7. Casper Star-Tribune. February 13, 1976.

8. Oil and Gas Journal. April 21, 1975.

9. Coal Age. March 1975.

10. Montana State Legislature. Montana Energy Policy Study, June 1975.

11. Coal Age. February 1976.

12. Coal Age. April 1975.

13. Denver Post. November 10, 1975.

14. Western Resources Wrapup. February 19, 1976.

15. Energy Transportation Systems, Inc. Slurry Pipeline Innovations in Energy Transportation, October 1975.

16. Denver Post. November 23, 1975.

17. Bechtel Corporation. Terminal Facilities for Western Coal Slurry Pipelines. Prepared for presentation at the 1976 AIME meeting, Las Vegas, Nev., February 22 through 26, 1976.

18. Oil & Gas Journal. June 30, 1975.

19. Coal Age. September 1974.

20. High Country News. February 13, 1976.

21. Engineering and Mining Journal. 1976 EMJ Survey of Mine and Plant Expansion, January 1976.

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24. Mining Record. December 31, 1975.

25. Mining Record. February 11, 1976.

26. Wyoming State Tribune. March 2, 1976.

27. Colorado School of Mines Research Institute. Industrial Newsletter, March 1976.

28. U.S. Bureau of Mines State Liaison Office, Cheyenne, Wyo.

29. Glass, Gary B. Wyoming Coal Directory. Public Information Circular 3. Wyoming Geological Survey. May 1976.

APPENDIX. - METHODS USED IN DATA ESTIMATES

Because of the many data gaps encountered in the information included in this report certain factors were used in arriving at estimates of data to fill these gaps. Estimates were not made for all data gaps owing to the lack of information required to derive certain estimating factors. The methods used for arriving at the estimates that were made follow:

Coal mines. - Employment estimates for coal mining operations are based on averages of 66 employees per million tons of production capacity for strip mines, and 345 employees per million tons for underground mines. These factors were calculated from 1974 data on employment for coal mines in U.S. Bureau of Mines Western Coal Producing Districts (12, and 14-23) and assumed to be representative of the future trends in western coal mining employment.[1]

Electric powerplants. - Annual coal consumption estimates for electric powerplants are based on a factor of 3.2 million tons per thousand megawatts of capacity. Employment estimates are based on an average of one employee per megawatt for peak construction, and one employee per 8 megawatts for operation. These factors were obtained from data on the San Juan Generating Station in New Mexico and assumed to be representative for other projects.

Coal gasification plants. - Employment estimates are based on the averages of 4.5 employees per 1 million cubic feet per day of capacity for peak construction and 2.4 employees per 1 million cubic feet per day for operation. These factors were obtained from data contained in the Institute of Gas Technology Abbreviated National Siting Study of March 1971 and were assumed to be representative of other projects.

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[1]U.S. Bureau of Mines Mineral Industry Surveys. Coal-Bituminous and Lignite in 1974. Division of Fuels Data and Division of Coal. January 27, 1976.

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